Poor Installation—A Case History . . . . . Pg. 6

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Congress OK's 20 Years On Home Improvements

WASHINGTON, D. C. — Expansion of the Federal Housing Administration's home improvement loan program that could mean easier terms for purchasers of central air conditioning and heating systems was part of the Federal housing bill passed by Congress last week and sent to the president for his signature.

Under the new law, homeowners apparently can get FHA-insured loans as large as $10,000 to improve their homes. They can get as high as 20 years to repay the loan. And they will not have to pay more than 6% interest on the loan.

Previously, they could get such loans only up to $3,500 at interest rates up to 9.7% and with three years to repay.

The new provisions are maximum, it should be noted. Lenders can still limit amounts of

(Continued on Back Page, Col. 4)

Heat Gain Standards In Final Review

CLEVELAND—An all-industry procedure for heat gain calculation and equipment selection for residential air conditioning has been completed and is currently being reviewed by three industry associations.

The procedure is designed to eliminate the variance between the many procedures available to the industry today and to give accurate results when applied to homes constructed of a wide variety of materials and of quite different architectural characteristics.

The procedure was developed by the Industry Heat Gain Joint Study Group established by National Warm Air Heating & Air Conditioning Association, the Air-Conditioning & Refrigeration Institute, and the Institute of Boiler & Radiator Manufacturers.

It is now being reviewed by the three associations leading to

(Continued on Page 4, Col. 1)

BULLETIN!

Copeland Strike Ends

SIDNEY, Ohio, June 29 — Production employes of Copeland Refrigeration Corp. ratified terms of a new three-year union contract today, ending a strike which had shut off production of Copeland compressors May 26.

The contract, which officials of the company said is "non-inflationary," was ratified in a secret ballot which resulted in a substantial majority vote in favor of accepting the specified terms.

Shipments of products from the plant began today, and production on a full basis will begin immediately, declared Frank J. Gleason, Copeland president.

Cooling Off
Kennedy's Continental

He'll be a real cool Kennedy (JFK, that is) when he rides in the new presidential limousine this summer. The driver and other passengers won't mind hot weather either. Among a host of specially-designed features of the custom version of Ford Motor Co.'s Lincoln Continental are separate air conditioners for front and rear compartments.

* * *

Among other cool—and refreshed—customers this summer will be the purchasers of English-made Rolls Royce and Bentley luxury cars. The cars, which carry price tags of about $16,000 to $30,000, are equipped with air conditioning—and bars.

* * *

And some unusual orders are being received these days by auto air conditioner makers: a

(Continued on Page 4, Col. 5)

ASHRAE Research Program Backed by Convention Vote

Everetts, Fox, Faust, Dube New Officers

Controversy on Lab Settled After Airing

By Phil B. Redeker

DENVER—John Everetts, Jr., consulting engineer from Philadelphia, is the president of the American Society of Heating, Refrigerating & Air-Conditioning Engineers, Inc.

Everetts has been a member of the society since 1929 and was elected to the council of ASHAE in 1956. His long career in the industry embraced engineering work with both manufacturing and consulting firms. He served in the U.S. Navy during World War II and now carries the rank of captain in

(Continued on Page 19, Col. 4)

DENVER—Controversy over the direction of the research program of the American Society of Heating, Refrigerating & Air-Conditioning Engineers, particularly with reference to the closing of the society's laboratory facility in Cleveland, was apparently laid to rest at the annual meeting here with the passage of a resolution by vote of the membership supporting the actions taken by the board of directors.

In a long opening business session, the matter got a thorough airing following the introduction of the resolution by E. P. Palmatier, Carrier Corp., chairman of the Research and Technical Committee of ASHRAE. Essence of this resolution was that:

"In spite of the fact that on Jan. 5, 1961, the R & T Committee went on record in disagreement with the decision of the board, subsequent planning and developments have led the R & T Committee to believe that the only logical course the society can take is to continue in our plans to close the laboratory and plan our research program with cooperative institutions, therefore the R & T Committee

(Continued on Page 19, Col. 1)

RACCA President Sees 'Definite Progress' In Solving Trade Problems

By Phil B. Redeker

CHICAGO—Definite progress has been made towards reaching a solution in some of the "trade relations" problems that exist between air conditioning and refrigeration contractors, and manufacturers and wholesale suppliers of such equipment, believes Walter McCarty, president, McCarty Brothers Equipment Corp., River Forest, Ill., and president of Refrigeration & Air Conditioning Contractors Association (RACCA National).

"The problem of direct selling by manufacturers has been dealt with both at the association-to-association level, and also by RACCA representations to individual manufacturers, and while it certainly couldn't be said that all of the problems as we see them have been cleared up, we believe that definite improvement can be noted in this situation," McCarty said.

At its 1960 national convention RACCA adopted a strong resolution against direct selling by manufacturers and in subsequent meetings with ARI the contractor viewpoint received a sympathetic hearing from the manufacturers group. However, McCarty believes that consider-

(Continued on Back Page, Col. 1)

Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Food from Sunshine

Today, July 3, happens to be "Dope's" birthday. He's seen a lot so far, but he sure as heck hasn't seen everything.

As a matter of fact, every new year seems to become more interesting, alarming, and exciting. Example:

Natural sunlight soon may be put to novel uses, according to Dr. Albert Szent-Gyorgyi, the Nobel laureate in medicine and physiology.

"I expect that we will steal the secrets of the plants and learn how to make food out of sunshine, most of which is wasted at present. We may even learn how to make food out of atomic energy."

Room for five billion well-fed people will come from turning sparsely-populated areas like Australia, Brazil, Canada, Africa—even the polar regions—into bustling continents, countries, and communities.

Apartment buildings will get taller to save land. Slums will be eliminated and, in their place, model communities will rise, he predicts. All thanks to better use of free sunshine!

The job situation will improve, with industries undreamed of today absorbing millions of workers.

The demand for professionals (doctors, scientists, teachers, communicators, engineers, chemists) will balloon.

The dollar, alas, probably will be worth less. You can count on that. Even the sun can't fry that dilemma.

Tall Tale

Believe it or not, a City Council discovered surplus money in its treasury. Immediately there

(Continued on Page 8, Col. 1)

How Detroit Handles 'Unapproved' Units

By George M. Hanning

DETROIT—To city inspectors charged with enforcing safety codes, untested and unlisted air conditioning and refrigeration equipment is a serious problem today and gets worse every year. Something ought to be done about it.

That's the opinion of Frank Drogosch, chief safety engineer for the city of Detroit, and his deputy, Hugh Goslin, refrigeration supervisory inspector.

They face the problem whenever a contractor seeks a permit to install a piece of equipment that has not been listed by Underwriters' Laboratories or other recognized testing laboratory or been previously approved for installation in Detroit by the Department of Buildings and Safety Engineering.

They must deny the permit, with reason stated.

Then it is up to the contractor to go back to the distributor and manufacturer for evidence of approval. If the manufacturer has submitted his equipment to UL for approval, he must get UL to inform Detroit that the model is approved.

If it has not been approved, then city officials will perform a pressure test of the equipment to determine its tightness and the acceptability of its components.

Acceptability, according to Drogosch, is based upon previous experience with the component. If the same component is used on a model already approved by UL or other recognized testing laboratory, it is acceptable.

"This is far from a proper test, but it is the best we can do

(Continued on Page 18, Col. 1)

Nesbitt Expands Sales Organization As American-Standard Pact Terminates

PHILADELPHIA — Over the next six months, John J. Nesbitt, Inc., manufacturer of heating and air conditioning equipment, expects to set up some 40 additional manufacturer's representatives, primarily in the midwestern, western, and southern states, along with a number of sales engineers who will be added to the present company sales organization.

This was announced by W. D. Widerman, vice president in charge of sales. He said the move, to be made in conjunction with Nesbitt's continuing expansion program will double the size of the company's current sales organization.

Widerman attributed the need for this expansion to new and diversified product lines, expanding market areas, and the recent termination of a long-standing agreement with American-Standard Industrial Div., which acted as sales agent for Nesbitt products to the school field.

He said the new sales personnel will handle the complete Nesbitt product line, including those which had been sold by American - Standard to the school field.

Widerman noted that this will be the first time in the history of the company that a totally integrated national marketing organization will be operating.

Controls of America Promotes Executives

MILWAUKEE—Two recent executive promotions in the Heating & Air Conditioning Div. of Controls Co. of America have been announced by G. D. Becker, vice president of the company and general manager of the division.

A. L. Topp has been appointed assistant general manager of the division and Jack S. Huber has become director of sales for the division.

Topp, a vice president of the division, has been with the company for 20 years. He has served as its director of engineering, and more recently as director of sales. Huber, formerly assistant director of sales, has had broad sales experience with the company as field sales engineer and midwestern district manager.

Philadelphia Approves Gas Rate Cut For Air Conditioning During Summer

PHILADELPHIA — Councilman Victor E. Moore, chairman, The Philadelphia Gas Commission, announced approval of reductions in Philadelphia's gas rates for residential, commercial, and industrial customers using gas for air conditioning.

The reductions were expected to become effective July 6.

For residential customers using gas for air conditioning, a one-third discount in the present residential service rate is provided for gas used during the four warmest months.

For commercial and industrial customers using gas for air conditioning, a 50% discount in the present heating service rate is provided for gas used during the same summer period.

In approving the rate reductions, Moore stated the Gas Commission was impressed with a two-fold advantage. First, Moore said, as the Philadelphia Gas Works' heating business has grown tremendously, the need for balancing winter peaks with summer usage has become econmically expedient.

Gas air conditioning, which has been gaining acceptance throughout the country, Moore continued, provides an excellent balancing factor potential. And, of course, the rate adjustments are designed to make gas air conditioning service as competitive as possible in Philadelhia.

There is every expectation of favorably developing the air conditioning business to a point where it will materially provide growth to P.G.W., he noted.

Acme Sets Up 2 New Product Divisions

JACKSON, Mich.—To better serve customers and company representatives and to speed new and improved products, Acme Industries, Inc., manufacturer of air conditioning and refrigeration equipment, has set up two new product divisions within the sales organization.

P. A. Weatherwax, executive vice president, said product sales managers have been appointed to head up each new department.

Air handling equipment, cooling towers, packaged air conditioners, and coils will be under E. David Hannan, who previously served as Acme's product management department supervisor.

Product sales managers for packaged chillers, shell and tube equipment, and fan coil units will be Peter Butterfield, who moves into this position from assistant field sales manager.

In a separate announcement, Weatherwax made known the appointment of William G. Layhe as secretary-treasurer of the company. Layhe came to Acme from Hancock Industries, where he held a similar post.

Youngstown Dealers To Get Story of Silver Shield Program

YOUNGSTOWN, Ohio—Heating and air conditioning dealer-contractors from the Youngstown marketing area will get details on the Silver Shield Program at a meeting scheduled for Thursday evening, July 6, at the Palazzo Food Supreme, 914 E. Midlothain Blvd.

Cooperating with the National Warm Air Heating & Air Conditioning Association is a Silver Shield Action Committee consisting of George J. West, West Mfg. Co., Canfield, Ohio; Carl Pedaline, Hubert Furnace Co.; Louis Cicchillo, Southern Furnace Co.; James McKernan, Price Heating Co., Girard, Ohio; and Robert Baum, Baum Heating & Mfg. Co.

Cool Retirees

PALM CITY, Calif.—Air conditioning is one of the features planned for one and two-bedroom cooperative apartments scheduled to be built in the $30 million Palm City retirement community here.

New addition to the famous Mine-to-Market Quality Line

PHELPS DODGE WROT FITTINGS FOR AIR CONDITIONING AND REFRIGERATION TUBE!

PHELPS DODGE has expanded its line of products for the refrigeration and air conditioning industry to include a wide selection of wrot solder-type fittings. In keeping with modern specifications, both fittings and tube can now be obtained from Phelps Dodge—a single dependable source of supply.

PD wrot fittings are available in sizes ranging from ⅛-inch to six inches. All fittings are protectively packaged to assure factory-clean condition. Initial warehouse stocks have been distributed to five key centers, Boston, Chicago, Los Angeles, Houston and Tampa, Fla., for fast, convenient service. Order through your Phelps Dodge wholesaler.

A copy of the new PD wrot fittings catalog is ready for you. Use the coupon above.

NLRB Takes Long View on Time Limit Governing Unfair Labor Act Complaints

WASHINGTON, D. C.—Creating a condition that leads to a violation of the National Labor Relations Act, even though the action that creates the condition occurred beyond the legal time limit on filing complaints, is also a violation of the act, the National Labor Relations Board has ruled.

The act says, in section 10 (b), that a complaint must be filed within six months after an alleged unfair labor practice occurs.

In the case under review, a Janesville, Wis., pipefitter named Hall filed charges on Nov. 24, 1959, that Plumbers & Pipefitters Local 214 caused his employer, D. L. Bradley, a plumbing and heating contractor, to fire him on May 25, 1959. This was one day within the six months limitation.

During that one day, the board admitted, Local 214 had done nothing to cause his discharge. However, prior to that time, it had exerted considerable pressure on Bradley to discharge Hall, who was not a union member and was making no effort to become one.

The board pointed out that Bradley, who was himself a union member, "was faced with disciplinary action because he had been working with Hall." The union also refused to refer any union members to Bradley until Hall was discharged, the board said.

This, the majority of the board said, "was attempting to cause and did cause Hall's discharge for discriminatory reasons.

"Bradley's letter to Hall reveals that Bradley was fearful of disciplinary action which the union might take against him if he retained Hall. Bradley was also aware that Hall's continued employment with him meant that the union would refuse to refer workmen, as specifically evidenced by the fact that he coupled his request for such referrals with a statement to the business agent that he had discharged Hall shortly after that.

"Because of these threats and fears, Bradley was induced to discharge Hall. We consider it immaterial that (the union's) attempts to cause Hall's discharge began before the 10 (b) period and we rely here only on the fact that its coercion was clearly efficacious within the 10 (b) period at the time of the discharge."

The board ordered the union to cease causing Bradley to discriminate against his employes, to withdraw its objections to Bradley's employment of Hall, and to reimburse Hall for any loss in pay.

Board Member Boyd Leedom dissented from this decision. He pointed out that the charge of unfair labor practice was brought against the union and not the employer. Therefore, he contended, "the issue is whether the union engaged in any conduct within the 10 (b) period which constitutes causing, or an attempt to cause, Hall's discharge. . . .

"I do not see how an employer's yielding to the union's demand or his state of mind or preoccupation over the consequences of not yielding, renders conduct, otherwise beyond the reach of the law, subject to its sanctions."

He recommended dismissal of the charge.

Picketing Job Site To Get Subcontract Agreement Upheld

WASHINGTON, D. C.—Two Phoenix, Ariz., construction unions, by picketing at construction sites to force a general contractor to sign a subcontracting agreement, did not violate the boycott provisions of the National Labor Relations Act, Wallace E. Royster, trial examiner for the National Labor Relations Board, has found.

But, when pickets carried placards saying that the unions wished to organize and bargain for the employer's employes and this induced neutrals not to cross the picket line, they violated section 8 (b) (7) (C) of the act.

This section prohibits recognition picketing without an election petition being filed within 30 days but allows publicity picketing if it does not induce neutral employes to refuse to pick up or deliver.

Accordingly, Royster recommended to the NLRB that the unions be ordered to cease picketing any job site of the general contractor, Colson & Stevens, with an object of forcing Colson to recognize or bargain with them as representatives of Colson's employes in a situation where such picketing violates section 8 (b) (7) (C).

At the same time Royster dismissed other charges against the unions.

He ruled that a proviso in Section 8 (e) of the act which permits picketing to obtain a subcontracting agreement to apply only to work done at construction sites effectively wipes out the prohibition against employe inducement covered by section 8 (b) (4) (A).

Because the picketing was to obtain the subcontracting agreement and not to enforce it, he argued that there were no violation of the prohibition against secondary boycott [section 8 (b) (4) (B)].

"It would indeed be . . . a pointless hoax for Congress to permit otherwise lawful picketing for a subcontractors clause in the construction industry" in one section of the act and then forbid it in another, Royster said.

"I find that it did not do so."

The unions involved are the Construction, Production & Maintenance Laborers Union Local 383 and Carpenters & Joiners of America, Local 1089.

Charges were filed by the Independent Contractors Association.

C. H. Hodges Dies

DETROIT — Charles H. Hodges, Jr., a former vice president of American-Standard and a member of its board of directors from 1943 to 1959, died in Detroit June 22.

Hodges joined Detroit Lubricator Co. in 1919, a predecessor company to the present Controls Div. of American-Standard.

He had served as president of the subsidiary company from 1938 to 1958 and as a corporate vice president from 1954 to 1959.

Phelps Dodge Copper Products Corp.
Dept. F-2, 300 Park Ave., New York 22, N.Y.
Please send me your new wrot fittings catalog.
Name_____
Firm_____
Street Address_____
City_____
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AIR-CONDITIONING AND REFRIGERATION WHOLESALERS A.R.W. ASSOCIATE MEMBER

Quality tube and fittings sold the quality way—through authorized refrigeration wholesalers!

PHELPS DODGE COPPER PRODUCTS CORPORATION
300 Park Avenue, New York 22, N. Y.

P D MINE TO MARKET

Heat Gain Procedures--

(Continued from Page 1, Col. 2)

final approval by members of each association.

H. T. Gilkey, director of technical services for NWAHACA and a member of the Joint Study Group, reported recently its development.

He noted that the work was inspired by the Federal Housing Administration two years ago. FHA found itself in the embarrassing position of having placed reliance in methods of heat gain calculation that came up with widely varying results for the same house. It asked the industry to solve the problem.

The Joint Study Group tackled the problem by interpreting and modifying data found in the ASHRAE Guide in the light of research experience accumulated with two NWAHACA research residences and two IBR research residences at the University of Illinois.

The research residences provided information on insulated and uninsulated houses; houses with basements, over crawl spaces, and over slabs; and houses with air systems and with water systems.

With the test data information from the four research residences, the group did not have to guess at the way in which they should interpret Guide data.

It was able to analyze very completely what went on within the residences and to develop realistic wall, door, and ceiling factors based up Guide data.

Members of the study group recognized that the biggest single cause of heat gain is sun shining through the windows. This heat gain was impossible to measure directly; thus, it was necessary to interpret the Guide window data in an indirect manner, Gilkey said.

As a result of its studies, the group came up with a series of five tables for use in heat gain calculation and equipment selection.

Table 1 provides some equivalent temperature differences for various types of construction at 90 and 95°F design temperatures in areas with low, medium, or high daily average temperature ranges.

These are average equivalent temperature differences which do not depend upon the direction which the wall faces so that only one factor for each type of wall is shown.

It does not show values which have been developed for warm partitions, floors above unconditioned rooms, and ceilings below unconditioned rooms.

Table 2 provides heat transfer multipliers for frame and veneer-on-frame walls. Final publication will include a table of equivalent temperature differences used, so anyone wishing to calculate heat gain for constructions not shown will have the basic information needed.

Table 3 gives heat transfer multipliers for ceilings under vented attic or vented flat roof.

Table 4 provides heat transfer multipliers for glass. Window load is divided into two components—that due to transmitted and absorbed solar energy and that due to the difference between inside design temperature and outside design temperature.

For occupancy or internal loads an allowance of 300 Btuh per person and a kitchen allowance of 1,200 Btuh are included. Infiltration heat gain is calculated on the basis of one-half air change per hour.

Adding all these together gives total sensible heat gain. Multiplied by 1.3 for latent heat, gives total heat gain of the structure.

Because everyone cannot agree on what the cooling objectives should be, a fifth table was added giving capacity multipliers for equipment selection.

Study group members, Gilkey said, agreed generally that 75° should be the inside control temperature, with a three degree variation as a practical minimum. Others do not believe that this precision of control is necessary.

In view of this difference, Table 5 gives capacity multipliers for selection of air-cooled and evaporatively-cooled condensing units. Multiplier is based on outside design temperature, the daily temperature range, and the desired indoor temperature swing.

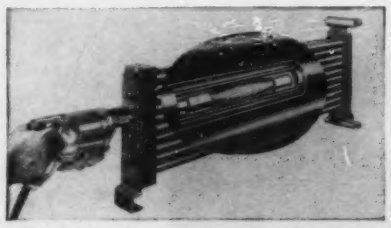
"Perhaps," Gilkey commented, "after industry practice becomes more standardized, this table can be eliminated."

Gilkey described the new procedure as "simple, direct, and accurate. It is sufficiently straightforward that members of the study group sincerely believe that those who use it will not get lost in the intricacies of procedure or in the details of the various tables. We feel that it will be very useful to the industry."

"Here's why I always pick H & M water-cooled condensers

...you can clean them safely because you clean them mechanically!

"Time was when I used chemicals to clean out the scale and sludge in my water-cooled refrigeration systems. But soon I found out that the chemicals were doing damage not only to the condensers but the cooling tower and pump, too.



"Now I always buy Halstead & Mitchell Water-Cooled Condensers, because they can be cleaned safely with a simple mechanical tool and an ordinary electric drill. The end plates remove easily to expose the water tubes."

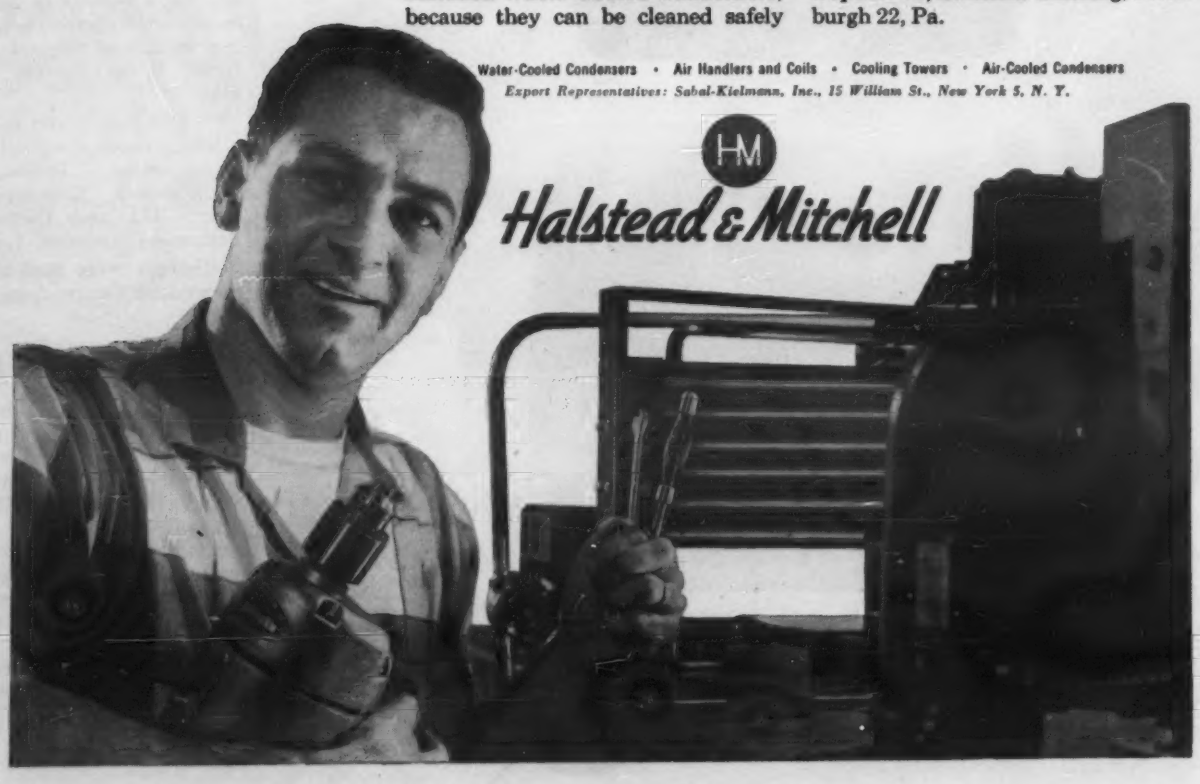
Another good reason to choose H & M condensers: they give more liquid sub-cooling because of the double-tube design and true counterflow of refrigerant and water.

There are five different types, including models for sea water or poor water conditions, in capacities of ⅛ to 25 tons.

Call your parts wholesaler for more information, or write for Bulletin WC-300. Halstead & Mitchell Co., Dept. H-71, Bessemer Building, Pittsburgh 22, Pa.

Water-Cooled Condensers • Air Handlers and Coils • Cooling Towers • Air-Cooled Condensers

Export Representatives: Sabal-Kielmann, Inc., 15 William St., New York 5, N. Y.



HM Halstead & Mitchell

Cooling Off--

(Continued from Page 1, Col. 3)

French Foreign Legion truck used in the Sahara Desert is cooled by a "Mark IV" unit; a huge slag-chipping machine used in heavy-rock quarries is equipped with a Climatic Air unit, and the company expects to cool 10 more of the machines; A.R.A. Mfg. is getting orders to air condition more farm machinery, particularly large wheat and cotton machines. Makers report orders also for air conditioners for use in boats and small aircraft.

* * *

More transport air conditioning news comes from—of all places—Alaska. Up there, The Alaska Railroad has air conditioned its "Scenic AuRoRa," better known as the "Fisherman's Special" because of the fishing at such sportsmen's stops as Willow Creek, Goose Creek, Little Susitna, Montana Creek, and Nancy Lake.

* * *

Both gas and electric air conditioning are being promoted to "egg heads" in a "Checkmate the Weather" promotion sponsored by *The Cincinnati Enquirer* and The Cincinnati Gas & Electric Co. through July 28.

The game of chess provides the theme and decorative scheme for a display in the utility's lobby which includes year-round central and room air conditioners. Chess sets, obtained in a contest, also are on display. Owner of winning set in each of four classifications will receive $25. Chess devotees compete for championship titles. The promotion also includes a "Checkmate the Weather" contest. Coupons from the *Enquirer* entitle contestants to try to "checkmate the weather."

NAPC Exposition Displays Few Cooling Items

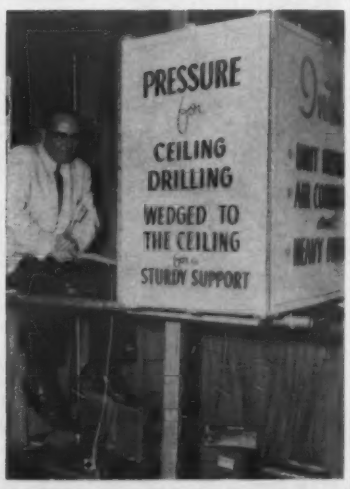
VALANCE COOLING system (overhead) for motels with packaged chiller unit was displayed by Edwards Engineering Corp. Lou Schneider, Indiana representative (l.), tells R. C. Edwards, president, that he has just closed a sale for a Valance cooling system in an Indianapolis doctors' clinic.

ZONE-A-TROL's automatic change-over system for heating and cooling with selector switch, was demonstrated by John F. Glump, vice president of Econo Products Co., Inc. Control panel provides single switch change-over control of all zone-controlled heating, cooling, and ventilating cycles.

NEW OFFICERS of NAPC, elected to serve during the 1961-1962 fiscal year, and their wives are (l. to r.) C. D. Brownell, Champaign, Ill., vice president; W. Wilbur White, Detroit, secretary, and Mrs. White; G. Allen Briggs, Oak Park, Mich., president, and Mrs. Briggs; Mrs. Carl N. Finley and Mr. Finley, New Orleans, treasurer; Mrs. Roland P. Sornsin and Mr. Sornsin, Fargo, N. D., second vice president. The new officers officially assumed their new posts on July 1.

REMOTE FAN-COIL unit for hydronics cooling and remote condensing unit for air-cooled air conditioning were displayed by Crane Co. J. S. Opferman, Detroit field representative for Crane, demonstrates.

The displays pictured above were the only cooling equipment displayed at the Detroit exposition of the National Association of Plumbing Contractors, with the exception of a line of mufflers shown by Ed Kellie of A. C. & R Components, Inc.



VERMETTE HI-JACK that will lift 500 lbs to a 10-ft height at the rate of 3 ft per minute is operated by Howard Vermette, president of Vermette Machine Co., Inc. One man can set up and operate the unit in minutes, Vermette said. Heaviest part weighs 40 lbs.

In The Lead With Ucon® Refrigerants

"Fustest with the mostest" is UCON IKE's history thus far, as witness the pioneering of the ring-top refrigerant cylinder, introduction of the handwheel cylinder valve, and instant cylinder deposit refunds . . . all important firsts in packaging and convenience.

And being in the lead is something UCON IKE and the friendly folks he represents, firmly intend to *continue*. When you *really* need something, *we'll deliver* – whether it be in packaging conveniences or helpful service.

Our promise: being on our toes to meet *your* every on-the-job refrigerant need.

For the most compact and *convenient* line of refrigerants . . . See your UCON Refrigerants wholesaler.

UCON Refrigerants are manufactured by
UNION CARBIDE CHEMICALS COMPANY – Division of Union Carbide Corporation
270 Park Avenue, New York 17, N. Y.

Exclusive Sales Agent to Air Conditioning and Refrigeration Wholesalers
ANSUL CHEMICAL COMPANY, Marinette, Wisconsin

UCON is a registered trademark of Union Carbide Corporation

UNION CARBIDE product Ucon® refrigerants — exclusive sales agent ANSUL

A Case of Bad Judgment

Midwestern Lawyer Cool To Air Conditioning When Installation Burns Out Switch Box and Compressor, Fails To Cool House

It has been estimated that the average installed central air conditioner is able to deliver only 7/10 of its rated capacity to the structure because of poor installation practices. Manufacturers repeatedly cite examples of component failures proved to be due to defective application, rather than manufacturing defect. Here is a case history of such an installation.

By I. Stepnich, District Manager, Penn Controls, Inc., Columbus, Ohio, and B. Kaufman, Assistant Professor of Mechanical Engineering, University of Idaho

Admittedly, the best sales promoter is a satisfied customer. Conversely, a dissatisfied customer can create a wide area of distrust for a product regardless of its Madison Ave. credentials.

In a bit of research on the latter type, the writers recently completed some on-the-spot, case history studies of disgruntled air conditioning buyers. Although a cause and cure of all poor customer relations did not result from these observations, they perhaps pointed out some known facts that deserve re-emphasis.

The common thread in these studies was not so much poor product design and manufacture as poor system design, installation, and service. When this is coupled with the sellers' ability to avoid financial responsibility for poor performance, a real "Jim Dandy" bad public relation expert is unleashed upon the community.

One case studied was particularly noteworthy for it seemed to contain all necessary ingredients for good customer alienation. It started with the desire for air conditioning by a prosperous midwestern lawyer. This, he reasoned, would be another step in providing better living for his family and himself.

Established Contractor With Top Brand Name

As a first step he selected an established contractor who represented one of the industry's best brand names and who had installed the heating when his home was built. No personal selling was required in this case. The customer was ready to buy air conditioning; he asked for it, and, in the end, he got it.

Ostensibly the contractor had installed the heating system with air conditioning in mind. However, he sought engineering advice and assistance from the manufacturer, and this resulted in the selection of a 5-ton self-contained unit discharging directly into the plenum of the warm air furnace.

Upon completion of the installation the customer felt that now he could relax with comfortably cool summer days, restful nights, and perhaps some measure of envy from his less fortunate friends. This dream was shattered early, however, as the unit was plagued with electrical problems, trip-outs, and inadequate cooling.

Nevertheless, the unit was nursed through one light cooling season and part of another by means of frequent service calls and convincing alibis. At this stage, however, the switch box burned out; when it was replaced, it was followed by a burnout of a lead wire. The customer was no longer concerned about cooling; he feared for the safety of his family as the result of the fire hazard. This fear was short lived, however, as the compressor burned out instead.

Conference Called

Now, reasoned the contractor, was the appropriate time to call a conference of all parties involved. In addition to the contractor and customer, representatives of the distributor, manufacturer, and power company were at the meeting.

The power company representative suggested a larger electrical service, the manufacturer's representative suggested an additional 3 tons' capacity, the contractor suggested heavier wiring, and the customer suggested he be relieved of all this additional expense. The latter suggestion was not the hit of the conference.

Nevertheless, the compressor was replaced and some wiring changes were made. The unit showed some improvement, but it still had high current draw, so, unknown to the customer, the displacement of the compressor was reduced to the equivalent of 3 tons. This did cure the electrical problems, but it left the customer with a 3-ton unit operating against an acknowledged load greater than 5 tons.

In addition the air distribution system was wholly inadequate. On the surface the ducts appeared capable of good distribution. Inside, however, there were restrictions and block-offs which imposed a penalty on the blower. Also the air leaving the unit travelled a corkscrew route through a small duct and com-

ALCO

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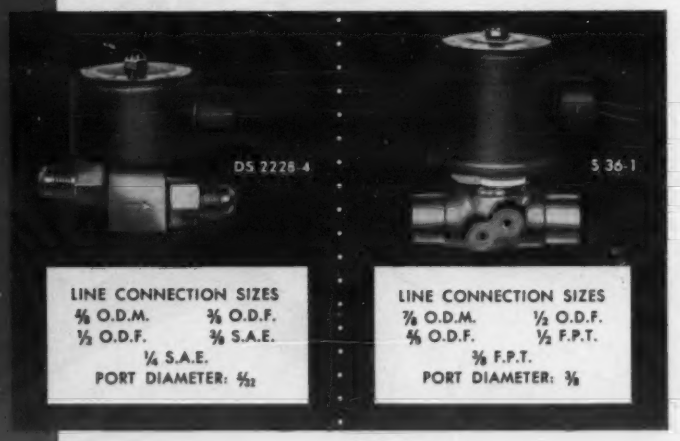
HIGH PRESSURE SOLENOID VALVES

300 LBS. M.O.P.D. common refrigerants except ammonia



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- *Assuring Maximum Life and Positive Control Performance*

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OF SOLENOID VALVES for EVERY APPLICATION
LIQUID • SUCTION • HOT GAS • WATER • STEAM • AIR

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NOW!

A SAFE NEW LIQUID SCALE REMOVER

A safe, high density, super concentrated, non-toxic acid formulation. Contains no hydrochloric or other fuming acids and can be safely used on aluminum, brass, copper or steel. No neutralizer needed. Safe to drain on shrubs or plant life when properly diluted. Quickly removes hard water scale, algae, organic and inorganic materials. Goes to work immediately . . . saves time . . . Economical. Combines the advantages of both dry and liquid cleaners. One gallon dissolves about 5 lbs. calcium carbonate scale, or 1½ times more scale per gallon than hydrochloric or muriatic acid cleaners.

Super Concentrate is a general purpose, heavy duty, scale remover in unbreakable plastic jugs.

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pletely lost its velocity head upon discharging into the furnace plenum.

As a remedial step, the door to the filter section was opened and the furnace blower turned on so both blowers were in parallel and drawing return air from the basement. This was calculated to increase air movement. It did but at the expense of cooling as the air conditioning fan was operating against the pressure built up by the furnace fan.

Serviceman Considered Member of Family

About the only thing the customer realized in these maneuverings was the companionship of the serviceman who called so often he was practically considered a member of the family. With this congenitally sick system, however, the serviceman could only juggle dampers in order to improve performance in one area while penalizing performance in another area.

As a result this system at the present time has a well cooled basement, some first floor, and practically no second floor cooling. The customer finally realized his restful nights, however; he installed a battery of window units in his second floor bedrooms.

Preliminary Study Could Have Avoided Many of The Costly Problems

The object lesson of this case history might be the well known "ounce of prevention." If this had taken the form of a well-documented study of heat gain, air distribution, and electrical requirements for the specific application, many of the costly problems might have been avoided on paper.

The manufacturer in this case was probably more guilty than anyone for advocating a general approach to a specific application which required a thorough study prior to installation.

The customer, in a sense, derived some measure of satisfaction from this whole experience; he and his wife were furnished a golden harvest of anecdotes and tidbits about the ineptness of people in general and air conditioning people in particular. This may be one factor why their community, which is noted for many things, is not noted for its air conditioned living.

WATER COOLER
10 GALLON PRESSURE TYPE
*$139.50
*To Dealers Only
Attractive • Sturdy • Economical • Stainless Steel Drain Top • Nickel Finished Copper Cooling Tank • ½ h.p. Tecumseh Hermetic Unit • Pre-Cooler • 5-Year Warranty on Refrigeration Cycle • Conforms to Government Specifications •

Remcor Products Co.
121 East Grand Avenue, Chicago 11, Illinois
manufacturers of Water Coolers since 1940
REMCOR
Model CW10A
Also 5 gallon Bottle Water Cooler—*$89.50

Looking for a Business to Buy . . . ?
Check the
Business Opportunities
Section
in the classified
advertising columns.

Sales Presentations (5)

Differ for Architects, Consultants, Contractors

John O. Roth, marketing manager for Dunham-Bush, West Hartford, Conn., frequently writes sales training lessons for distribution within the company. Some of Roth's material is of such general interest that the NEWS publishes pertinent portions here. Especially of interest is the slanting of sales presentations toward consulting engineers, architects, and contractors. In this fifth instalment Roth discusses the purchaser.

●

Selling Purchaser

Finally there is the purchaser himself—the user of the product you represent. The user is always searching for that product which will provide him or her with a most satisfactory performance. He wants to be convinced by the performance of the product purchased that the money expended for its purchase was well spent.

The purchaser also considers such factors as quietness of operation, dependability of operation, and appearance of your product in their home. Invariably they are deeply concerned with the engineering and workmanship of the product they purchase.

To design quality into a product that will provide the user with all of the results he or she wishes to achieve is expensive. However, most purchasers of today realize that it is simply good economics to pay a little higher price and receive the many benefits which they are seeking.

In preparing your sales approach where a purchaser is involved who will actually be using your product daily, it is desirable to dwell upon the service facilities which are available.

It is even more desirable to emphasize the fact that years of manufacturing experience in addition to utilization of the finest possible components help to keep service requirements at a minimum.

These, then, are some of the components which must be carefully considered in planning your sales approach. Knowledge of the generalities which apply to all prospects, in addition to a thorough evaluation of the specific interests and inclinations of each class of prospect, cannot fail to produce a "sales approach that sells."

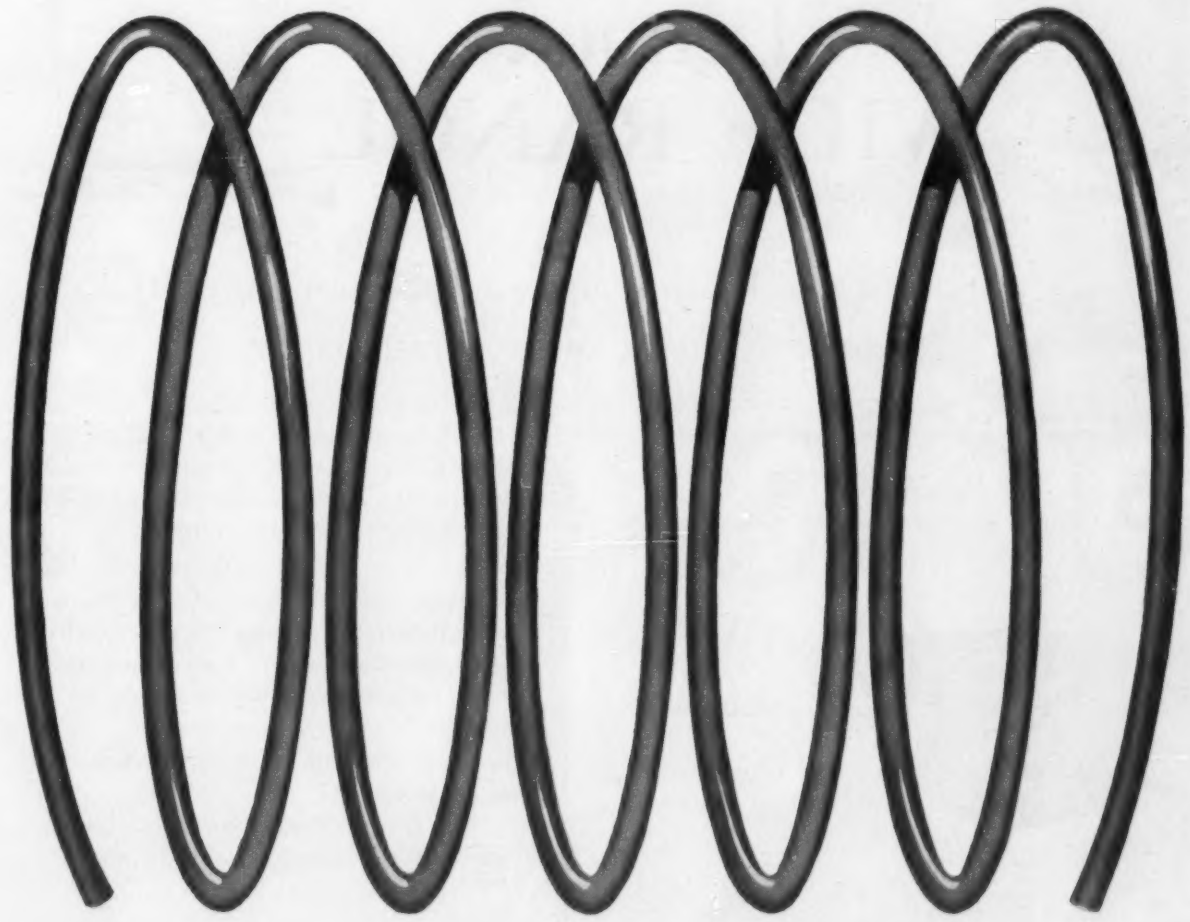
(The End)

Weksler Catalogs Recording Instruments

FREEPORT, L. I., N. Y.—A comprehensive catalog on recording instruments has been compiled by Weksler Instruments Corp. here

Designated No. 625, the catalog covers all Weksler recording and controlling instruments for temperature, pressure, humidity, and time-of-operation. Copies are available on letterhead request, according to the company.

TURN TO ROCHESTER STEEL TUBING . . .



your #1 pipeline to ECONOMICAL PRODUCTION COILING

More and more refrigeration people are discovering the substantial savings inherent in Rochester Steel Tubing in coils. Ready to roll on your production line, these long random coils are available in lengths up to 3,000 feet. No more unnecessary joints and short end waste. Easy adaptation to modern production line techniques. Better inventory controls at less expense. And there's more to the Rochester story. You also benefit from other Rochester Steel Tubing characteristics which contribute to its success: quality, strength, cleanliness, and delivery service you can depend on. They're all part of Rochester Reliability. Result: You get refrigeration tubing that works the way you want it to work for as long as you specify. If you'd like this story elaborated, write or wire Rochester Tubing Sales Manager.

GM
Rochester Reflects Reliability
GENERAL MOTORS

STEEL TUBING BY ROCHESTER PRODUCTS

ROCHESTER PRODUCTS DIVISION OF GENERAL MOTORS. ROCHESTER. NEW YORK

Inside Dope

By GEORGE F. TAUBENECK

(Continued from Page 1)

were suggestions as to how it could be spent.

"Why don't we trade in our old fire equipment and get some modern stuff?" throgged a lightweight Councilman who sported an Errol Flynn mustache. "In our firehouse is the most outdated and cantankerous equipment in this vicinity.

"I move we take the extra money and equip our fire department."

There were no seconds.

"I think we should refurbish the city hall," interjected a distinguished white-haired gentleman. "The hall is not equal to the town. It's rickety and run-down, and it should be refaced so that we could be proud of it.

"I move we refurbish the city hall."

Again, no seconds.

At this moment the town banker, a man who owned a piece of all present, arose. Everyone listened dutifully.

"Gentlemen," he cleared his throat, "I think that these notions have merit . . . a great deal of merit. However, I suggest that we build a tower clock to commemorate all the wonderful people who have gone before us in making ours the Greatest Little Town on Earth."

A quick thinker promptly seconded the motion—and it was passed.

Day came for the dedication. Again the banker arose to speechify on the wonders of this commemorative tick-tock.

Flags were hoisted, the village cannon was fired, and there was a tremendous shooting of fireworks.

A small boy with a "roman candle" aimed it too low, it landed in the mayor's office at the City Hall, and ignited old tax assessments gathering dust on his desk.

Immediately the building blazed. Fire department horses were no better than platers, and within an hour the building became redolantly embered.

As the mayor poked around in the ashes, perhaps looking for the key to the city or at least an old phone number, the little man with the mustache and the white-haired gentleman eyed the panting firemen and the ruins.

Then both raised their eyes to the clock in the tower.

"At least," said the Mustache to Mr. White Hair, "we know what time the fire started."

Out of Our Mailbox

J. B. Olivieri & Associates, Inc.
Detroit, Mich.

"Dope":

Mr. George Sanctorum, our esteemed Vice President, wrote or rewrote, however you would have it, the following verse. I hope you enjoy it as much as I did.

JOSEPH B. OLIVIERI

* * *

AN ENGINEERS SOLILOQUY
(With apologies to Hamlet)

To draw, or not to draw—
That is the question:
Whether 'tis better in the mind to design
The heating and the plumbing of outrageous structures
Or by opposing erase them.
To rebel—to revolt—
To draw no more; And by a revolt to say we end
The heartache, and the thousand natural changes
That designs are heir to. 'Tis a consummation
Devoutly to be wish'd. To rebel—to revolt.
To revolt—perchance to redesign: Ay, there's the rub!
For in that redesign what changes may come
When we have penciled in more equipment space,
Must give us pause. There's the respect
That makes jobs of such long duration.
For who would bear the inadequate openings,
The lack of space, the proud man's scornful fee,
The pangs of inaccessibility, the printers delay,
The insolence of Owners, the emergency of "now,"
When he himself might his redesign make
With a bare eraser? Who would these fardels bear,
To grunt and sweat above a smoking pen,
But that dread of something after bids—
The undiscovered error, from whose emergence
No Engineer recovers—puzzles the will
And makes us rather bear those clients we have
Than fly to others that we know not of?
Thus hunger does make cowards of us all,
And thus the native hue of improvement
Is sicklied o'er with the pale cast of compromise,
And buildings of great height and breadth
Remain with their equipment rooms undersized
And become monstrosities of maintenance.

Quotes of the Week

A man's mind is like his car. If it gets to knocking too much, he'd better have it overhauled or change it.—*Survey Bulletin.*

Have no fear of change as such and, on the other hand, no liking for it merely for its own sake.—ROBERT MOSES.

Last Laughs

Saloon-keeper in a small town had a friend who ran a hardware store a few doors down the street. They delighted in playing practical jokes on each other.

Mr. Salooner was tending bar as usual on a slow afternoon. His friend and several other men were playing cards at a table nearby.

A Salvation Army lass entered, and asked the bartender for a donation (not knowing that he owned the establishment).

Attempting to put his pal on the spot, Mr. Saloon Owner pointed out the hardwareman and gruffed:

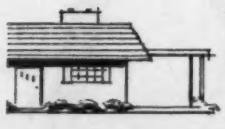
"That's the boss sitting over there. He'll give you a donation."

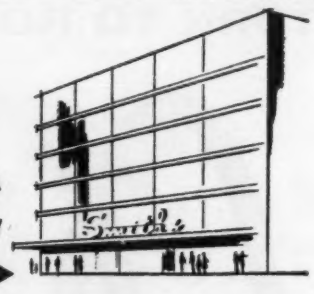
Reacted the hardware-store friend:

"Okay, give her five dollars out of the cash register."

See how you profit because of the

Lennox WIDE RANGE

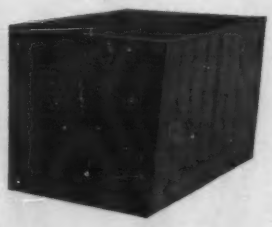




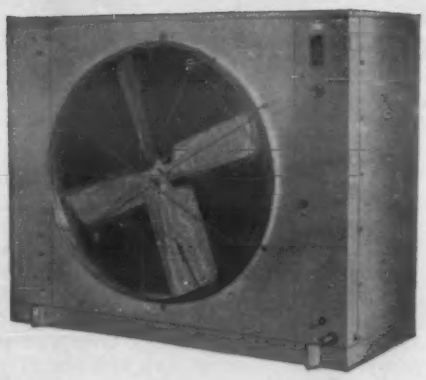
Full line of heating and air conditioning units... for every type and size installation

EXAMPLE

One Lennox series of air-cooled condensing units (HSA2) comes in 1½, 2, 3, 4, 5, 7, 11, 17 and 25 ton capacities.



2-TON



17-TON

Featuring:

- Extremely high Btuh cooling per watt of power used because these units sub-cool refrigerant as much as 20° lower than condensing temperature.
- Low air resistance and low power costs because of huge coil, straight through air travel and exclusive Power Prop air mover. Quiet.
- Exclusive bonding of fins and tubes gives additional efficiency. Each coil is tested at 400 psi under water. Cabinets are acoustically lined; treated to fight corrosion.

The Lennox dealer is not confined to a short line—and he doesn't have to handle two or three brands in order to get *quality* equipment for all his needs.

What does this mean to you as a dealer? First, it simplifies many of your business problems. It also helps you build a stronger "image" in your community. Even more importantly, it enables you to compete on the bigger heating and air conditioning jobs (with factory field men to assist you).

The Lennox line includes gas, electric, coal and oil heating systems, heat pumps, dual-fuel industrial heaters to 2,000,000 Btuh—and whisper-quiet air conditioning units up to 25 ton size.

So if this is your year of decision—the time to make the big change for your big future—you'll find the profit signs all point to Lennox. Get the complete story—without obligation. Write your nearest Lennox factory or Lennox, 408 S. 12th Ave., Marshalltown, Iowa.

Don't be satisfied with less than

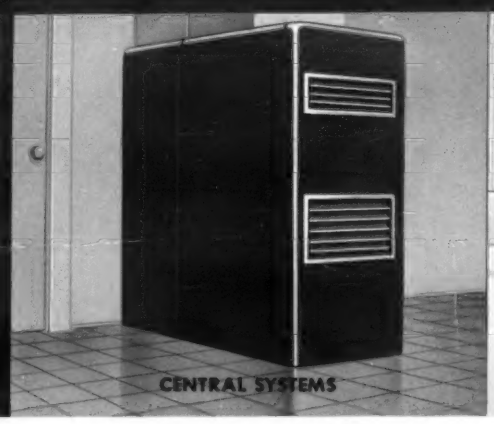
LENNOX

HEATS, COOLS, TREATS AND MOVES AIR

LENNOX Industries Inc., est. 1895—Marshalltown, Des Moines, Ia.; Columbus, O.; Syracuse, N.Y.; Decatur, Ga.; Ft. Worth, Tex.; Salt Lake City, Utah; Los Angeles, Calif. LENNOX Industries (Canada) Ltd.—Toronto, Montreal, Calgary, Vancouver, Winnipeg

BIG FAMILY OF SIZES. Bendix-Westinghouse compressors and condensing units come in a wide variety of sizes and capacities—ranging from ⅛ hp all the way up to 4 hp. So, no matter what the needs of your refrigeration or air conditioning equipment, you'll find one of our units will fill the bill exactly. You'll also find it delivers greater efficiency in less space and at lower cost. To find out more, turn the page.

Bendix-Westinghouse MOTOR COMPRESSORS



BENDIX-WESTINGHOUSE COMPRESSOR LINE COVERS EVERY RESIDENTIAL AIR CONDITIONING NEED

MOTOR COMPRESSORS FOR RESIDENTIAL AIR CONDITIONING

Model	HP	Capacity*
DEHUMIDIFIERS		
CH 20 V-1	⅓	1,800
YCH 25 V-1	¼	3,400
ROOM UNITS		
YCH 137 VA-1	¾	6,100
YCH 161 VA-1	1	7,050
YCH 176 VA-1	1	8,500
YCH 213 VA-1	1	10,000
YCH 213 VA-2	1	10,000
YCH 232 VA-1	1	11,000
YCH 250 VA-2	1	12,000
CH 286 TA-2	1	12,800
YCH 310 VA-2	1½	14,500
CH 325 TA-2	1½	14,400
CH 350 TA-2	1½	15,300
CH 383 TA-2	1½	17,800
CH 400 TA-2	2	18,400
CH 420 TA-2	2	19,500
CH 455 TA-2	2	21,600
CH 490 TA-2	2	24,400
CENTRAL SYSTEMS		
CH 490 TA-2**	2	24,400
YCH 700 TA-2**	2½	30,500
YCH 830 TA-2**	3	36,500
YH 932 TA-2	3½	42,200
YH 1020 TA-2	4	47,500

Y in the model number denotes 2-pole; all others are 4-pole

*Based on: 45°F. Evaporator temperature
130°F. Condensing temperature
95°F. Return gas temperature entering compressor
15°F. Liquid subcooling
95°F. Ambient

**Available PSC/CSR. All central system compressors available single or three phase

Here—in the modern Bendix-Westinghouse 1/5 to 4 h.p. compressor line—residential air conditioning manufacturers are finding the best answers to their compressor needs for room units, central systems, and dehumidifiers.

Featured are such outstanding *built-in* values as: unusually quiet operation for maximum user satisfaction . . . overload protection for most efficient performance in all operating ranges . . . latest-type motor insulation for maximum safety . . . and full suction gas cooling and positive pressure lubrication for utmost dependability.

Other *plus* advantages that are yours with Bendix-Westinghouse include: reduced size that takes less installation space, lighter weight that cuts shipping expense, and lower price that reduces production costs.

No other compressor line offers you so many *extra* values. Ask for prices and detailed specifications.

Bendix-Westinghouse

EVANSVILLE, INDIANA

A Division of Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio

Export Sales: Bendix International, 205 E. 42nd St., New York 17, N. Y.; Peter A. Karl, Inc., Union Station Bldg., Utica 2, N. Y.; Sabal-Kielmann, Inc., 15 William St., New York 5, N. Y.

Discounting Receivables (2)

Here's a Source of Extra Money You May Be Overlooking If You Need More Capital To Carry You over a Rough Spot

By George M. Hanning

It is both a strength and a weakness of the heating-cooling industry that so many of its small businesses have been formed by former servicemen, contractors, and engineers. The strength comes from their knowledge of the product; the weakness comes from their frequently never having been exposed to business know-how. From time to time, the NEWS will discuss facets of business administration, accounting, financing which are of specific interests to these small business organizations.

Special NEWS Report

One way in which a businessman can get a short-term loan when he has exhausted the possibilities of unsecured credit, is to borrow against his accounts receivable.

In the June 26 issue, we outlined what your banker is able and willing to do for you in this regard. We indicated that if your banker is unable to help you as much as you would like—due to Federal or state regulations or the bank's policies—another source of accounts receivable loans is the commercial finance company.

Because the commercial finance company is not as closely regulated as the bank, it many times can fill your needs when the bank cannot. It can also allow you more flexible use of your funds than the bank can.

When you apply to a commercial finance company for a loan against accounts receivable, the company will send a man out to go over your books carefully. He will determine what volume of accounts receivable you have and, by the nature of your accounts receivable, what percentage of that volume his company will lend you. Usually the percentage will be about 80%, but may go as high as 90%.

One qualification, however. To make its lending on accounts receivable practical, the finance company may require that your borrowing needs average at least $20,000 per month.

The company will set up for you a line of credit in the amount of money your receivables warrant. You borrow whatever part of it you need. On this, you pay about 1 to 1¼% per month interest.

Now that you have figured out that this runs to 12 to 15% per year and you feel your hair starting to curl, forget it for a minute. A little later we will tell you how the difference between bank costs and these costs are not as great as they appear.

The loan to you is with full recourse. You are responsible for your own credit and for any failure to pay by your customers. As part of this deal, the finance company won't collect for you, although it may be able to offer you a collection service on a separate basis. It will, if you like, help you check your customer's credit.

The finance company does not inquire into your need for the money. You can use it for whatever purpose you wish—to increase working capital, to take advantage of trade discounts, to pay taxes, or other legitimate purposes.

With the finance company, you do not make regular periodic payments on your loan. Instead, you collect your receivables in your normal manner and forward them to the loan company. Thus you pay off the loan as you collect your money. Like the bank, your customer is not notified of your loan arrangement. By a "blank endorsement" device, it will not be revealed to him.

Another advantage: As your total volume of receivables increases, the amount of money that you can borrow also increases.

Now, here is why the finance company's *costs* are not so much greater than some bank's *costs* for the money you use even though there may be a considerable difference in interest *rates*.

The commercial finance company admittedly cannot match the 5 to 6% rate that the banker will offer you. It won't try. But, the finance company will point out, the difference often isn't as much as you think.

One large finance company, James Talcott, Inc., charges interest only on the money you actually use and only for the time it is used. Other finance companies and some banks follow similar practices.

There are no compensating balances to maintain. There is no deduction of interest in advance as is done by some banks. There is no need to deposit money in advance to make future payments.

Interest is figured on an average daily cash balance basis. That means that the finance company computes from the receipts you send in as you receive them the exact balance you owe daily. It averages up these amounts for the month and strikes the average daily balance. Your interest is computed on that amount.

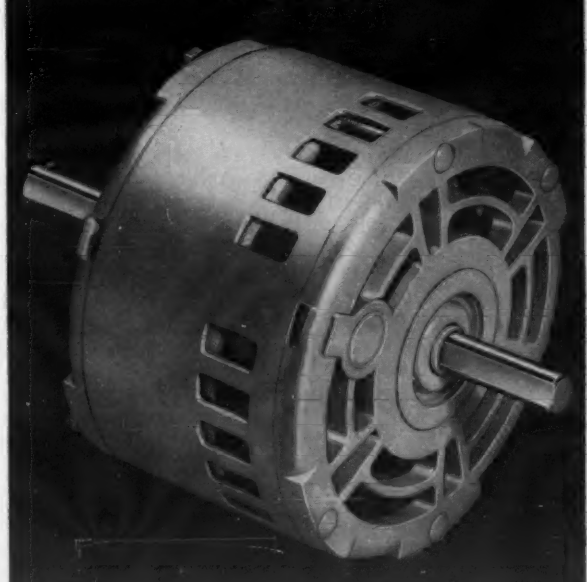
Thus, the company explains, if the borrower needs only $50,000 to use instead of the full $100,000 credit available, and only uses it for 20 days during the month, he is charged only for that amount and only for that period of time.

Hence, Talcott says, in actual practice, the effective rate of interest charged by a finance firm is much closer to the interest on unsecured bank financing than it appears at first glance—and the client has the effective use of his loan.

When figuring rates and cost of borrowed money, the company comments, the main consideration should be not what the money costs, but what it will earn and what can be accomplished with it, as compared to what would happen without it. You may be able to earn more in trade discounts, for instance, than the money will cost.

Where heat is a problem . . .
or efficiency a limitation

SPECIFY
THIS NEW
LEECE-NEVILLE
SPLIT
CAPACITOR
MOTOR

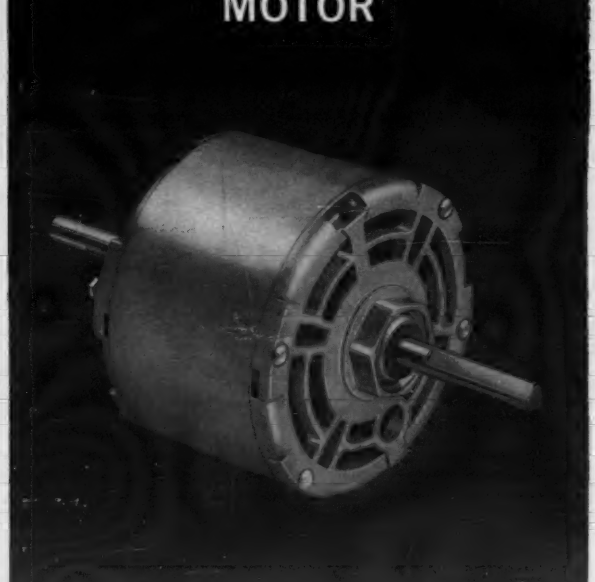


Model 6E (6 pole—1050 rpm)—Quieter and cooler running than any current design motor, this new Leece-Neville PSC motor can put an end to your problems of high current drain with low current requirements. New design features assure highest power factor and efficiency in room air conditioning use.

Model No.	Ratings
806E	1/2
646E	1/3
486E	1/4
406E	1/6
326E	1/10
246E	1/15

If you need
rugged strength and economy

SPECIFY
THIS
LEECE-NEVILLE
SHADED
POLE
MOTOR



Model 6D (6 pole—1050 rpm)—Why pay for more motor than you need. This L-N shaded pole motor combines rugged strength, economy and quiet, smooth running power. It's ideal for air conditioning, refrigeration or heating service.

Model No.	Ratings
806D	1/4
566D	1/6
486D	1/8
406D	1/10
326D	1/12

New Leece-Neville motors offer you high power, high efficiency, long life

More than 50 years of experience in the manufacturing of motors and other quality electrical equipment stands behind Leece-Neville's new line of shaded pole and permanent split capacitor motors, with basic units ranging from 1/150 to 1/2 hp. Leece-Neville's fully staffed engineering department can recommend or help you adapt a basic motor, or design a special motor to your specifications. Modern manufacturing facilities assure delivery to your schedules and lead times. For detailed information, just mail the coupon at right.

Information on 2 pole, 4 pole and other 6 pole motors upon request.

QUALITY ELECTRICAL EQUIPMENT
Leece-Neville
SINCE 1909

The Leece-Neville Company, Dept. AC-7
Georgia Division, Gainesville, Georgia
Please forward details on shaded pole and permanent split capacitor motors.

*Name*_____ *Title*_____
*Company*_____
*Address*_____
*City*_____ *Zone*____ *State*_____
*Product Manufactured*_____

Editorial

Is There A Need for Industry-Owned Testing Facilities?

LAST week's editorial suggested that the air conditioning industry has perhaps grown enough to be able to support its own sales academy where professional salesmanship can be taught. This week, beginning on Page One, the NEWS carries a story in which an authoritative source suggests that perhaps the cooling industry has matured enough to need its own testing facilities.

This is not the first time the NEWS has encountered this suggestion, and future articles will report the variations of opinion around the country. Basically, though, here are the key arguments offered by those who suggest such an industry-owned testing laboratory:

- Without in any way belittling the accomplishments and value of Underwriters' Laboratories, it has become obvious that the cooling industry has grown so fast and is moving so rapidly that UL finds it physically impossible to handle testing as fast as the industry would like.
- The several pending certification programs call for performance testing. Once again, the number of commercial laboratories able to handle such sampling and testing is limited. To get increased facilities at such a laboratory, like Electrical Testing Laboratories in New York, the cooling industry must pay the cost anyway.
- The volume of the refrigeration and air conditioning industry is now high enough, there are enough original equipment manufacturers and their suppliers to support an independent laboratory whose only function will be to conduct tests—and perhaps research later—for the cooling people.

We haven't talked to enough people, we haven't studied this idea enough to take an editorial position on it. But we believe it is important our readers know the idea has been offered, so they can give it some thought.

Tempus Does Fugit

For decades, the Germans have had the reputation of being world leaders in science and technology. Dyes, metalworking processes, optics, fine machine tools are examples which were justly held up for the world's admiration and emulation. Engineering, physics, and chemistry students in colleges all over the world continually encounter German scientists and inventions in their studies. Deutschland was the example of the ultimate proof of the value of pure research.

It comes as somewhat of a surprise, therefore, to learn that some German authorities are concerned over the lack of interest in scientific professions among their young people, especially a lack of interest in research.

"It was not long ago that researchers of other countries studied the German language in order to be able to read the scientific literature," recalls Dr. Reinhold Schairer of Cologne. "They soon will have to learn Russian. Britain, France, America, Russia have adopted the idea that 'Research is destiny,'" he says. "Why are we falling back?"

While Schairer admits that Germany still has prominent researchers, he complains that successors are not available. "Law and business studies are more attractive than natural sciences or technology."

And, using a comparison frequently made in the United States, Schairer asks, "Are football and athletic records more important than research and science? Skilled workers are being paid more than researchers. Has the German people lost its faith in research?"

Time does pass; things do change.

Really decent people are to be found only amongst men who have definite, either conservative or radical, convictions; so-called moderate men are much inclined to rewards, commissions, orders, promotions.—ANTON CHEKHOV.

The sun and the moon and the stars would have disappeared long ago—as even their infinitely more numerous analogues here on earth are likely to disappear—had they happened to be within reach of predatory human hands.—HAVELOCK ELLIS.

For the artist, life is always a discipline, and no discipline can be without pain.—HAVELOCK ELLIS.

ER···UH··· I REALIZE YOU'VE BEEN WORKING AROUND THE CLOCK ON IT FOR MONTHS, SWEATLEY, BUT WE'RE ANXIOUS TO START PRODUCTION···· WHEN DO WE GET IT?
WHY, CHIEF···YOU CAME IN AT JUST THE RIGHT TIME···· JUST THE DIMENSIONS ON THE DISCOM-BUBULATOR··· AND··
···I'M FINISHED!!
AND IF IT'S ANY CONSOLATION, SWEATLEY, CARTOONISTS DO IT, TOO
THANK AND A TIP OF THE HATLO HAT TO DAVE MACK, UNIV. OF WISCONSIN, MADISON 6, WISC.
JIMMY HATLO
11-28
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They'll Do It Every Time

by Jimmy Hatlo

CAPACITOR, STARTING RELAY PROBLEM

Cleveland, Ohio

Editor:

At the last RSES State convention in Dayton there was a Dayton wholesaler that talked about a package kit that would replace any relay and capacitor in the field. He is now selling this kit.

In his talk before the group he mentioned that capacitors have a plus or minus rating of 20%. Relays have the same. The electric rates vary plus or minus 10%; so he said who is kidding who about the necessity for an exact replacement.

Well, most of us are afraid to go along with him until it is cleared by our manufacturers. But he has some points that I feel might be justified.

This capacitor and starting relay problem is a real one for us in the field. Many times our suppliers can't give us a replacement or know what we should use. As a result a lot of time is spent which we either have to eat ourselves or pass onto our customers.

This lack of standardization in our industry makes it just about impossible to carry all the necessary relays, capacitors, etc., that we need in our service trucks; so we have to charge our customers for traveling time to a supply house and back. You can appreciate that this makes the cost of service to our customers much higher than it should be.

Maybe part of the answer is to have a capacitor, relay, etc., made to exact standards. Then we could use it for a greater range of replacements. Even though these parts cost us more, it would be cheaper for us and our customers. If we could invest about $100.00 for capacitors and starting relays, like this man in Dayton sells, we could stock our trucks for any replacement. Then we would be able to give faster service, see more people, save our customers money, and make more money ourselves.

I have talked to our suppliers and two large manufacturers' representatives of compressors. They agree the idea is good. But then they tell why it can't be done. As long as this attitude of thinking of why it can't be done exists, it never will be done. My feeling is that we all should *start thinking of how it can be done.* Then maybe something will be accomplished.

W.P.K.

MOLECULAR SIEVES AND REFRIGERANT 22

Danfoss, Inc.
Lodi, N. J.

Editor:

With reference to your article on molecular sieves in AIR CONDITIONING, HEATING & REFRIGERATION NEWS of May 8, we take the liberty to ask you about your opinion on the usage of LMS filter-driers on refrigerant 22 systems.

We ask this question because of the controversial opinions on this subject displayed by European (mostly German) refrigeration engineers. It seems that they indeed have had experiences with LMS-dust clogging up refrigerant 22 systems.

We would very much appreciate your clarifying statement on the above subject.

GUNNAR THULIN

EDITOR'S REPLY:

Yes, we are aware, not only of German experience with molecular sieves, but also of some American tests which indicate that there is some reaction between Refrigerant-22 and molecular sieves. To our knowledge, this reaction is not of significant magnitude; practically, it has no actual bearing on the operation of the system.

We are keeping our eye on this, and we shall report developments as they occur.

AIR CONDITIONING HEATING & REFRIGERATION NEWS
F. M. COCKRELL, Founder

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Current Literature

Combination Cooler, Freezer, Refrigerator

INDIANAPOLIS — "Booklet 553-CF," describing a combination cooler-freezer-refrigerator which meets new standards of The National Sanitation Foundation, is available free from the manufacturer, Elliott-Williams Co., Inc., 3737 Sutherland Ave., Indianapolis 18, Ind.

Designated as model CF, the unit combines a walk-in cooler, walk-in freezer, and reach-in refrigerator. To permit easier erection and future changes, it is built of standard sections. Sizes offered range from 6 ft 10 in. square to 60 ft square, in any shape or height desired.

"The N.S.F. code, which became effective in May this year, calls for a curved radius of ¼ in. or greater on all interior corners, walk-in door sill at same height as inside bottom, and aluminum alloy or stainless steel interior finishes," the company pointed out.

Preserving Biologicals

NEW YORK CITY—An 8-page pamphlet (F-1270) describing the uses and advantages of preserving biological materials with liquid nitrogen is available from Linde Co., Div. of Union Carbide Corp., 270 park Ave., New York 17.

"Widely used commercially to freeze and store bull semen, liquid nitrogen (-320°F) has been gaining ever greater acceptance as the refrigerating medium for the long-term preservation of a number of biologicals," the company said. "The pamphlet, 'The Preservation of Biological Materials with Liquid Nitrogen,' outlines our present understanding of the effects of ultra-low temperatures on biological materials."

Manhour Estimating

HOUSTON, Texas — Publication of "Estimator's Heating, Plumbing and Air-Conditioning Manhour Manual," by John S. Page, has been announced by Gulf Publishing Co., P. O. Box 2608, Houston 1, Texas. Price is $7.50.

"The manual points out how to arrive at composite rate using productivity efficiency and production elements," the announcement said. "With the composite rate, manhour estimating can be applied to any heating, air conditioning, ventilating, or plumbing job."

Insulation Adhesives

DETROIT — New insulation adhesive literature is offered by St. Clair Rubber Co., 107 Clifford, Detroit 26, Mich.

Included are "St. Clair Insulation Adhesives," a catalog describing all the various types of the company's insulation adhesives, and separate catalog sheets supplying complete data on "Clair Coat" lagging adhesive and St. Clair lap sealing adhesive.

Plant Vacation Schedule

Shutdowns Starting July 31 or Earlier

Company	Shutdown Period Plant	Office	Shipments From Plant
Bridgeport Thermostat Div., Robertshaw-Fulton Controls Co., Milford, Conn.	7/14-7/30	7/14-7/30	
Fogel Refrigerator Co., Philadelphia	7/22-8/6	Open	Emergency
Mears Controls, Inc., Beaverton, Ore.	7/22-8/6	Open	None
Ranco, Inc., Columbus, Ohio	7/27-7/28	Open	None
Automatic Machine Products Sales Co., Attleboro, Mass.	7/28-8/13	7/28-8/13	None
Arkla Air Conditioning Corp., Evansville, Ind.	7/29-8/13	7/29-8/13	Regular
Cambridge Filter Corp., Syracuse, N. Y.	7/29-8/13	Open	Stock Only
Friedrich Refrigerators, Inc., San Antonio, Texas	7/29-8/13	Skeleton	Emergency
General Controls Co., Skokie, Ill.	7/29-8/13	Open	Emergency
Paragon Electric Co., Inc., Two Rivers, Wis.	7/29-8/6	7/29-8/6	Emergency
Tube Manifold Corp., N. Tonawanda, N. Y.	7/29-8/20	7/29-8/20	None
Utility Fan Corp., Los Angeles	7/29-8/13		Stock Only
Ward Leonard Electric Co., Mt. Vernon, N. Y.	7/29-8/13	7/29-8/13	Stock Only
Ace Pump Corp., Memphis	7/31-8/11		Regular
Ansul, Chemical Co., Marinette, Wis.	7/31-8/6	Open	Emergency
Arrow-Hart & Hegeman Electric Co., Hartford, Conn.	7/31-8/13	Open	Stock Only
Buffalo Forge Co., Buffalo	7/31-8/12		Emergency
Carrier Air Conditioning Co., Syracuse, N. Y.	7/31-8/20	8/7 -8/20	Emergency, Stock Only
Carson Mfg. Co., Inc., Indianapolis	7/31-8/13	7/31-8/13	None
Deming Co., Salem, Ohio	7/31-8/11	7/31-8/11	Emergency
Fusite Corp., Cincinnati	7/31-8/13	7/31-8/13	None
Kensico Tube Co., Div. of Robinson Technical Products, Inc., Mt. Kisco, N. Y.	7/31-8/13		Stock Only
Marlow Pumps Div., Bell & Gossett Co., Midland Park, N. J.	7/31-8/13	7/31-8/13	Emergency
Revcor, Inc., Carpentersville, Ill.	7/31-8/13	Open	Emergency
Vilter Mfg. Corp., Milwaukee	7/31-8/13		Emergency

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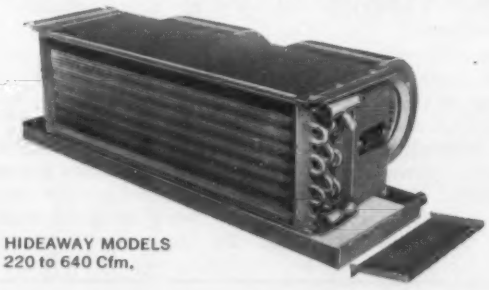

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TECH CENTER

by *FRANK J. VERSAGI*

Heating, Cooling & Refrigeration In Supermarkets

Part 3

(From a talk given before the Jacksonville, Fla., chapter of ASHRAE)

Let's switch to heating. Probably the most common way to heat supermarkets is by the use of space heaters. There are several advantages to this technique, most of which are known to you. It is possible to use only as much heat as necessary; it is possible to direct heat to areas where it is most needed; it is possible to get heating without taking up valuable store space for equipment or ductwork.

This last reason is, of course, the major reason that roof-top heating and cooling units are becoming increasingly popular in supermarkets. These units in which a roof-mounted air conditioner is combined with usually a gas-fired heating system have the same advantages year-round that the unit heaters have in winter.

Large Savings Seen from Using Machine Room Heat for Store Area

No matter what method of heating, the store owner is concerned with reducing his heating costs. To this end, there has been a rash of publicity about methods which apparently take advantage of the heat generated in an air-cooled machine room to reduce heating costs for the store. Most of these systems operate by taking the air off the condensers and passing it through an attic space and then back into the machine room. The theory is that this hot air blowing through the attic space will reduce heat loss through the attic and roof.

A recently published article suggests that an 11,000-sq ft supermarket was able to save $783 by using this method of heat reclamation. This compares with a story published in the NEWS in 1957 which indicated a fuel saving of some $600 per year. That original story also indicated that by use of a similar technique in summer for attic ventilation, it was possible to cool with a 15-ton unit a store which otherwise would have required a 25-ton unit.

In this installation, the machine room was kept at 70°, while in the more recent story, the contractor claimed that air must be between 50 and 60° before re-entering the condensers. The contractor in this last case suggests that this recirculating system can result in up to 50% savings in original investment in heating equipment, up to 35% savings in original investment in cooling equipment.

All such stories have been forcibly challenged by other contractors and engineers. Some claim to have tried the system and found that it does not work at all. Others claim that it is theoretically unrealistic. Still others claim that when they compare what is claimed for such systems with their own experience with air-cooled machine rooms, they can only judge the proposals as impractical.

In this last group is one construction engineer for a large supermarket chain, which has stores north and south of the Mason-Dixon line. "I find it impossible to understand how heat can be extracted from a machine room in winter to help heat the rest of the building when—in our experience—it is necessary in winter to add radiant heat to the machine room in order to get proper operation of the air-cooled condensing units." This company uses steam radiation right behind the condensers to supply this heat when ambient conditions are so low that 70° cannot be maintained in the machine room.

Another executive from a food chain remarks that a savings of almost $800 on a 11,000-sq ft store sounds extremely unrealistic since "we spend only $1,200 a year to heat a 15,000-sq ft market in our northernmost stores."

Shoppers' Viewpoint

We have left till last the viewpoint of the consumer. I mentioned earlier that a customer does not enter a food store to be comfortable. She enters it to buy food. Nevertheless, if the customer is made uncomfortable while shopping, it's very likely that she'll seek another store the next time. Assuming now that the lady shopper is properly dressed, it makes her uncomfortable to lean into a frozen food case and be exposed to refrigerated temperatures while a unit heater is blowing hot air down the back of her neck.

The warning that one manufacturer made against too large a concentration of vertical display fixtures is a very realistic one because the radiant cooling effect of such fixtures is enough to make people uncomfortable. I have walked toward the newer air curtain type displays, and felt the heat leaving my body. In Michigan there is one supermarket which contains a couple hundred feet of air curtain type displays, and the customers chronically complain of low temperatures.

Temperatures and air distribution patterns which may be suitable in the core of the store where the shopper is moving about picking items off shelves and from cases may be wholly unrealistic at the checkout counter where she may have to stand relatively still for 10 minutes waiting her turn.

Reviewing then, we have in this interrelationship among heating, air conditioning, and refrigeration in a supermarket the four viewpoints of the commercial refrigeration equipment manufacturer, the store owner, the heating and cooling contractor, and the shopper.

Engineering Disagreements

Complicating the differences which result just from the several viewpoints, are the engineering disagreements over such items as the effect of radiant heat, the intereffect between refrigerated display cases and air conditioning systems, the practicality of attempting to use machine room heat to reduce store heating costs, the compromises which must be made between the desire to merchandise, the desire to preserve foodstuffs, and the desire to maintain comfortable conditions in the store.

Architects, you know, are notorious for resenting it when a magazine runs a picture of only part of a structure they have designed. They insist, for example, "We did not design windows, we did not design portals, we designed an entire building. Show the entire building or show nothing," they complain.

The time is here, I believe, when this integrated habit of thinking which is characteristic of the architect be applied to the design and installation of supermarkets. It is incongruous, to say the least, to have different groups of engineers, each authoritative and knowledgeable in their own field, insisting upon certain conditions and factors without regard for the effect of these conditions and factors upon associated groups.

Engineering Viewpoints Should Be Discussed

No one expects that overnight the heating contractor, the air conditioning contractor, the store owner, and the commercial refrigeration manufacturer are going to form a committee, decide on the best over-all approach, and proceed from there.

At the very least, however, it would seem the moral responsibility of the air conditioning, heating, and refrigeration engineers to realize that these engineering disagreements exist and to call for their open discussion either at formal meetings or among committees made up of manufacturers' engineering representatives.

As engineers and scientists, you know that nothing beats frank discussion and interchange of opinions for clearing the air and advancing the art. General sales managers are forever telling their men after they have assigned them an impossible quota, "I have given you the general idea; you take care of the details."

Gentlemen, I have outlined some areas of disagreement and have suggested the need for improvement; you take it from there.

Herman Named to Safety Board In California

SACRAMENTO, Calif. — An air conditioning contractor, Joe Herman of Los Angeles, has been appointed to a four-year term on the five-member state industrial safety board which has authority to establish state safety orders after public hearings.

Herman is a past president of the Sheet Metal Contractors Association of Southern California, and of the Mechanical Contractors Association of Southern California.

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Lennox Offers 51,000 Btuh Input Furnace

● Improved insulation and better millwork in the new small houses, and a growing trend for individual heating units in apartments, are responsible for its development of a compact 51,000 Btuh input gas furnace, according to Lennox Industries, Inc., Dept. AH&RN, 200 S. 12th Ave., Marshalltown, Iowa.

"The new unit delivers 40,800 Btuh at the bonnet and is shipped completely assembled with controls mounted, pre-wired, and plumbed," the company said.

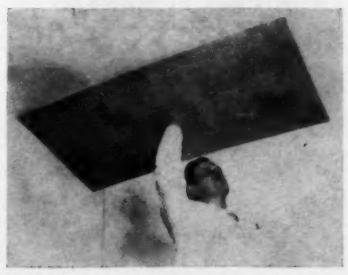
"The GH7D-51 has a direct drive blower, is AGA approved for all gases, including propane, and carries zero clearance approvals for both sides and rear. This permits snug installation in a closet using floor space of only 12 by 27⅞ in. The unit is 37 in. high. It is anticipated that the popular method of installation will be on a raised closet floor permitting return air to be brought in at any or all sides, entering the furnace through a bottom opening."

Duct Insulation Features Rigidity, Strength

● An improved spun mineral fiber duct insulation, said to have unusual rigidity and strength at no sacrifice in thermal insulating qualities, has been announced by Baldwin - Ehret - Hill, Inc., Dept. AH&RN, 500 Breunig Ave., Trenton 2, N. J.

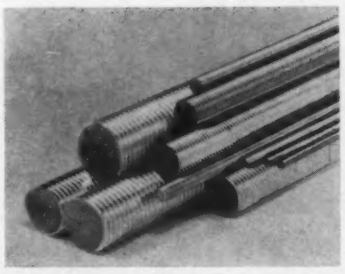
The new resin bonded material is called Baldwin-Ehret-Hill "E-Z Ply" because its improved mechanical properties will make it much easier to handle and apply, with less waste due to breakage, according to the company.

E-Z Ply is available either plain or with the following factory-applied facings: black Kraft paper vapor barrier bonded with a thick coat of high-penetration asphalt; scrim-reinforced aluminum foil laminated with flame proof Kraft paper; embossed aluminum foil; and neoprene.



PHOTOGRAPH demonstrates rigidity of E-Z PLY duct insulation.

"E-Z Ply has a thermal conductivity ('k' factor) of 0.24 at a mean temperature of 75°F and its maximum temperature limit is 450°F," the company said. "It comes in 2 by 4-ft panels in thicknesses of 1, 1½, and 2 in."



'Unirod' Said To Cut Labor, Inventories

● Substantial reductions in site labor and inventory costs and increased flexibility in a variety of electrical and mechanical applications will result from the use of the broad line of "Unirod" continuous threaded rods, according to Unistrut Products Co., Dept. AH&RN, 933 W. Washington Blvd., Chicago 7.

Contractors and plant maintenance departments can hold on-the-job stocks to a minimum by cutting the new Unirods to fit job requirements, the company said. Applications include drop ceilings and supports for electrical conduit, lighting, heating, piping, air conditioning ducts and units, and telephone and electrical cable trays as well as anchor bolts and tie rods.

Unistrut branches and distributors are now stocking Unirod continuous threaded steel rod in standard lengths from 2 ft to 12 ft, in National Coarse thread from 6 gauge to 2½-in. diameter, and in National Fine thread from 6 gauge to 1-in. diameter. Steel finishes include oil, blue rust resistant, and zinc plated. Unirod continuous threaded brass rod is available in standard lengths from 12 in. to 36 in., from 6 gauge up to ¾-in. diameter, in National Coarse thread.

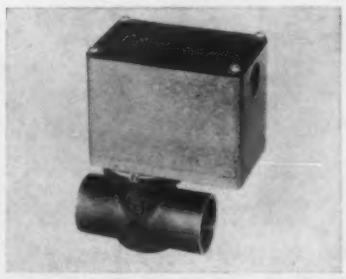
Zone Valve Controls Water or Steam

● A new thermostatically-controlled, motor-operated hydronic zone valve, designated "VM-120," for control of water or steam in residential and light commercial heating or cooling systems, has been introduced by General Controls Co., Dept. AH&RN, 801 Allen Ave., Glendale 1, Calif.

According to the manufacturer, the valve is a low voltage wing type for installation at the radiator or in the supply piping to the zone to be controlled. "Its compact design permits easy installation between rafters and joists or in convectors," the company pointed out.

"Other features are synthetic packing which provides protection against leakage and a quiet powerful 24-volt electric motor requiring no lubrication. It can be opened or closed manually if power fails, and the operating control will automatically take over when electric power is restored.

"Specifications include: timing—opening and closing speed, 30 seconds each cycle; body and trim of brass; standard manual operator and position indicator, and maximum water temperature of 250°F. Body rating is 50 psi maximum, and highest operating pressure differential is 15 psi. Companion room thermostats are General Controls' T-91 or T-190, both available with heat anticipation."

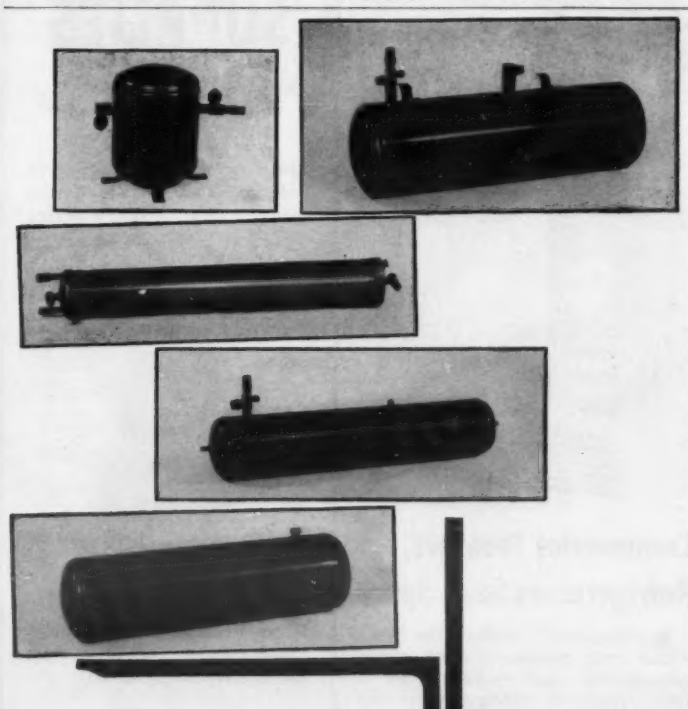


More details on the products described on these pages may be obtained by writing the manufacturer at the address given in each story.

Adhesive Binds Rubber To All Types of Metals

● A new, clear plastic adhesive, "Dekophane," for binding rubber to metal has been announced by The Crystal Essence Corp., Dept. AH&RN, P.O. Box 108, Bound Brook, N. J.

According to the company, Dekophane will bind rubber to all types of metal surfaces and "maintains the adhesion for years because the material never dries out or becomes brittle. Also, Dekophane is completely waterproof so that moisture does not effect the seal."



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STANDARD DESIGNS

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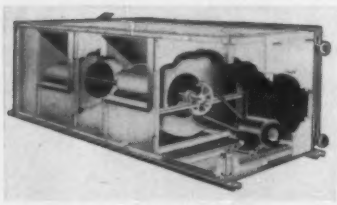
Air Movers Feature 'Safety Engineering'



● Details on new units in the 500 to 35,000 cfm range, introduced to broaden its coverage of the commercial/industrial air conditioning markets, have been released by Drayer-Hanson Div., Hi-Press Air Conditioning of America, Inc., Dept. AH&RN, 3301 Medford St., Los Angeles 63, Calif.

"Designated 'FAM,' the new horizontal/vertical series of one and two-fan air movers are safety engineered to obsolete use of belt guard," it was stated. "Motors are positioned inside the unit; a large full-entry access door has been provided. Models FAM-108 through 116 and FAM-208 through 230, carry weights from 295 lbs up to 3,200 lbs.

"By a simple adaption in the field, coils and filter frame may be added externally to the unit. FAM's are finished in rust inhibiting semi-gloss green enamel. Modular construction of unit affords on-job flexibility in that fan sections may be field rotated. Extra sturdy frame—structural steel electric-welded angle iron construction—supports basic components in each section independently of panels."

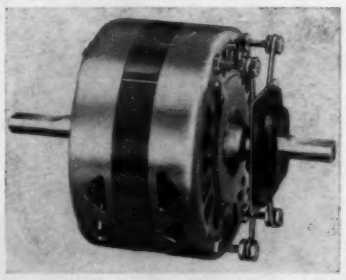
On motors up to and including 7½ hp, a variable pitch motor drive is provided. All sheaves are case semi-steel. Sized for 150% brake horsepower are heavy-duty V-belts.

An adjustable motor-mount base and standard belt duty, 1,750 rpm drip-proof motors are part of basic equipment.

Replacement Motor Is for Older Conditioners

● A new Redmond Type AR fractional horsepower electric motor has been developed specifically to solve the problem of replacing motors in older style air conditioners using square-type mountings, according to Distributors Div., Redmond Co., Inc., Dept. AH&RN, Owosso, Mich.

"Replacement of the burned out motor is a quick, simple process—no base is needed, as the replacement motor fits right into the base in the unit," the company explained. "Adjustments are simple to make, as the nut is placed at the desired spot on the through bolts, and tightened."



A 6-pole shaded pole motor with a horsepower range of 1/10 through 1/6, these motors are available in single-speed and two-speeds, 115 volts and 230 volts, 1,050 rpm.

When The Line Voltage Measures

Above Normal

or

Below Normal

Install an ACME ELECTRIC Buck and Boost Transformer

● Air conditioning equipment cannot function properly if connected to a supply circuit that is substantially below or in excess of the normal rating of the motor.

An air conditioning unit with a motor designed for 230 volts operation will lose torque, overheat or cycle off-and-on if operated from a circuit below the nameplate rating.

A Buck and Boost transformer connected to a 208 volt circuit and adjusted for a 10% boost will supply 228.8 volts which is entirely satisfactory for 230 volt motor operation.

If operated on excessively high voltage the motor will run hot, windings char and finally burn-out and the cost of consumed electric current will be higher than necessary.

To correct undervoltage or overvoltage conditions — install an Acme Electric Buck and Boost transformer. Write for catalog.

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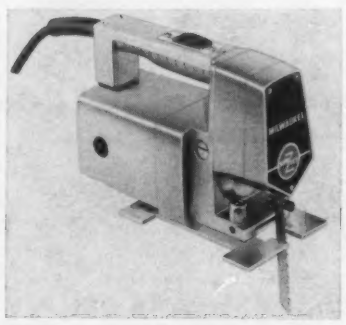
TRANSFORMERS

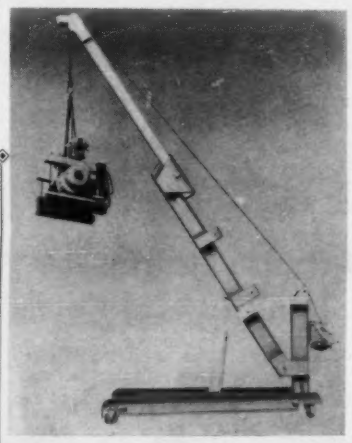


Offers New Approach To Flush-Cuts, Miters

● A new approach to flush-cut and miter sawing reportedly is highlighted in the new heavy-duty jig-saw announced by Milwaukee Electric Tool Corp., Dept. AH&RN, 5368 W. State St., Milwaukee 8.

"Called a 'Sawzitt,' the tool features an adjustable pivoting head which allows the tool to remain upright even at 45° cuts," the company said. "Another exclusive feature, a turn and lock shoe, assures correct blade clearance for straight, miter, and flush cuts."

The Sawzitt weighs 5 lbs and stands 5½ in. high. The tool is designed to cut straight lines, curves, and intricate scrolls in practically any sawable material at a rate of 3,500 ¾-in. strokes per minute. It is priced at only $69.50 complete with starter set of 11 assorted Sawzitt blades and combination circle and rip guide.



Self-Raising Boom, Hoist Features Free Wheeling

● "Handy Loader," a self-raising adjustable boom and hoist combination, is being offered by General Hoist & Equipment Co., Dept. AH&RN, 2772 Norton Ave., Lynwood, Calif.

Free wheeling on ball bearing casters enables the user quickly and easily to move up to 2,000 lbs to any location in any direction, according to the manufacturer. Boom adjusts to 18 ft, 14 ft, and 10-ft height with over-all height 6 ft in closed position.

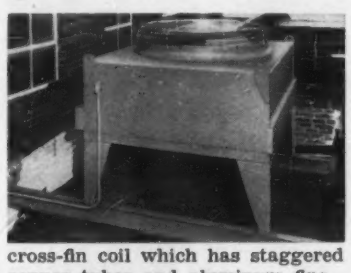
Slime Killer Safe for Hospitals, Restaurants

● A new odorless, non-toxic chemical product called "Vaporene R" that is said to kill slime growths in air conditioning systems, but which is described as safe to use even in hospitals, restaurants, and food processing plants, has been developed by the Metropolitan Refining Co., Inc., Dept. AH&RN, 50-23 23rd St., Long Island City 1, N. Y.

A special test kit is offered by the company for use with the new product to enable the user to tell when he has added the correct amount to the water in a system.

Vaporene R is the latest in a "family" of Vaporene formulations developed by the company to control corrosion and scale as well as slime growths.

13 Vertical Air Discharge Condensers Added



● Thirteen vertical air discharge models have been added to its line of "Zephyrcon" air-cooled condensers by Larkin Coils, Inc., Dept. AH&RN, 519 Memorial Dr., S.E., Atlanta 1, Ga. They range in capacity from 5 to 60 tons with dual units available up to 120 tons.

Simultaneously, Larkin expanded its line of horizontal air flow Zephyrcons from 14 to 18 single-unit models. This lineup now includes five direct-drive models (2 to 10 tons) and 13 belt-driven models (5 to 60 tons).

The low-silhouette vertical air flow Zephyrcons are shipped with legs attached to facilitate rigging and handling. Heavy eye bolts or eye plates are bolted to the unit to permit easy lifting. All Zephyrcon air-cooled condensers are equipped with the patented Larkin cross-fin coil which has staggered copper tubes and aluminum fins.

Each belt-driven Zephyrcon is equipped with two matched adjustable standard v-belts. Motors are designed for heavy-duty operation. They are drip-proof, NEMA-frame, ball bearing motors, located within unit housing for protection from weather damage.

Casings are made of heavy-gauge aluminum to provide corrosion resistance and protection. All Zephyrcons are supplied with a safety spiral flat wire guard which is heavily zinc-plated and iridite-dipped for corrosion resistance.

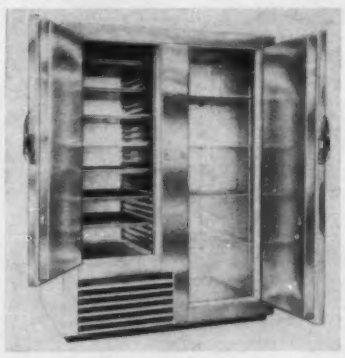
Phelps Adds Wrought And Cast Fittings

● The addition of a complete selection of wrought and cast fittings to its line of tubular products has been announced by Phelps Dodge Copper Products Corp., Dept. AH&RN, 300 Park Ave., New York, N. Y.

Low pressure valves will also be included in this expansion of service to the plumbing, heating, air conditioning, and refrigeration industries, the company pointed out.

The move enables Phelps Dodge and its authorized wholesalers to offer a complete package of tubes and fittings in the same order, it was stated.

Both the wrought and cast fittings are available in sizes ranging from ⅛ in to 6 in. Factory-clean condition will be assured through protective packaging, according to the company. Initial stocks have been distributed to Phelps Dodge mill depots in five cities: Boston, Chicago, Los Angeles, Houston, and Tampa.



Commercial Freezers, Refrigerators Save Space

● Additional savings in wall space are provided institutions, restaurants, and bakeries by a new series of refrigerators and freezers whose narrow, upright design conceals more than 41 cu ft of capacity, according to Nor-Lake, Inc., Dept. AH&RN, Second and Elm, Hudson, Wis.

"The extraordinary capacity of these 53½-in-wide units is made possible largely by new mullion-type cooling coils which are confined to small areas in the cabinets," the company stated.

"Economy of space is also promoted by self-contained condensing units and automatic defrosting mechanisms. Hermetically sealed compressors of ⅓ and ½ hp are used in the refrigerator and freezer, respectively."

The standard refrigerator (R41) has a suggested list price of $960, and the freezer (41XH) lists for $1,160. Without automatic defrosting, the freezer lists for $960.

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DEPARTMENT OF BUILDINGS AND SAFETY ENGINEERING
4th FLOOR, CITY-COUNTY BUILDING, DETROIT 26, MICHIGAN
WOodward 5-4200

Date..... Receipt No.....
Paid.....19....

REQUEST FOR INVESTIGATION OF REFRIGERATION EQUIPMENT

.....
.....

Name of Submittor..... Address of Submittor.....
Unit Trade Name..... Unit Used for.....
Unit Model No..... Unit Serial No.....
Refrigerant..... Amount of Refrigerant.....
Horsepower..... Voltage..... Phase.....
Time and place where unit will be investigated. (Must be in the City of Detroit at a place other than the premises of the user).....
.....

BUREAU OF SAFETY ENGINEERING Date..... Fee.....
BUREAU OF ELECTRICAL INSPECTION Date..... Fee.....
M 56-32 Total.....

WHEN A contractor wants the city of Detroit to test a piece of refrigeration equipment so that it can be installed in the city, he uses this to make his request for a test.

How Detroit Handles Unapproved Units

(Continued from Page 1)

with the manpower available and without adequate laboratory facilities," Drogosch commented.

Goslin noted that even if a unit passes these refrigeration procedures it often fails to pass electrical inspection. Victor DeCenzo of the city electrical inspection department backed him up in this.

Corded Wiring Offers Problem

The trouble often lies in the corded wiring now commonly used on air conditioners. UL will approve this type of wiring, DeCenzo noted, provided it meets UL standard for refrigeration equipment. But lacking UL approval, the city must rely on the National Electrical Code, which does not recognize such use. Electrical raceways are needed for installation in Detroit.

"The difficulty lies," DeCenzo said, "in the lack of standards for corded wiring. Nowhere can we find any standards to test this wiring by. So we have to reject it."

In a recent instance, for example, three of nine remote air conditioning units by one manufacturer failed to pass the refrigeration test and all of them failed the electrical test.

"We don't bother to approve units on refrigeration any more," Goslin said, "when we know that they will not get by on electrical."

Pressure Tests Usually Made on Premises of Equipment Distributor

Pressure tests are usually made on the premises of the equipment distributor or the contractor, if there is no local distributor. The distributor or contractor accepts full liability for any damage as a result of the test.

For the combined refrigeration and electrical test, a fee of $40 is charged to the contractor. He usually passes it on to the manufacturer.

To indicate the scope of the problem the city faces, Goslin totaled up 264 models of air conditioning equipment without UL listing that were submitted to the city for installation so far this year.

"These include units from the biggest manufacturers in the business as well as from some smaller manufacturers who don't even try to go through UL," Goslin said. "They range from room units to big tonnage equipment."

Eventually most of these units do get approved. But in the meantime, installation is often delayed until some sort of acceptable approval is received.

Unmarked Pressure Vessels a Problem

One outstanding cause of rejection currently is from unmarked pressure vessels. The city will not accept decals as a proper marking.

"We have written to pressure vessel manufacturers informing them of this and asking them to either stamp the pressure limit on their vessels or state it on a plate permanently attached to the vessel," Goslin said. Minimum marking should show manufacturer's name or symbol, model number of vessel, and maximum allowable working pressure.

Whether or not the manufacturers will comply with this request remains to be seen.

Because UL no longer tests compressors separately, Goslin has written to compressor manufacturers to supply the city with test data on each of their models, indicating the bursting point or a point where the unit begins to show strain.

Most compressor manufacturers now automatically send such data to the city when new model numbers are introduced. This helps considerably in speeding approval of untested packages using these compressors.

The city has also asked manufacturers to submit their evaporator and condenser coils to the bursting test and certify the results to the city.

Drogosch Urges Industry To Set Up Own Test Lab

What is the solution to this problem? Drogosch has an answer that he has advocated to industry groups for years, though so far without result.

That is for the air conditioning and refrigeration industry to set up an independent laboratory not beholden to any manufacturer to test its production units.

The laboratory should be provided with sufficient facilities to get out test results within a week or so of a specific request.

"I have no quarrel with Underwriters' Laboratories," Drogosch noted. "They make good tests and have the facilities to do so.

"But it is ridiculous for approval to be held up for months after units have been in the field and even, in some cases, until after production runs have been completed and the manufacturer is already introducing models for the next year. That is what causes trouble for us and for the industry."

CITY OF DETROIT
BUREAU OF SAFETY ENGINEERING — INVESTIGATION DATA REPORT
REFRIGERATION EQUIPMENT

Date.....
Location Where Investigation Made .....
Submittor..... Address.....
Manufacturer..... Address.....
Unit Trade Name..... Type of System.....
Unit Model No. ..... Unit Serial No. .....
Unit to be used for ..... Horsepower.....
Refrigerant..... Amount of Refrigerant.....lbs.
.....
.....

COMPONENTS OF SYSTEM

Compressor Make ..... Type .....
Model No. .....Listed by U.L.? Yes..... No.....
Condenser (Receiver) Make ..... Air or Water? .....
Model No. .....Listed by U.L.? Yes..... No.....
Evaporator Make ..... Type .....
Model No. .....Listed by U.L.? Yes..... No.....
If tubing, Type ..... Thickness .....
Kind of Piping ..... Wall Thickness ..... Melting Point, if brazed or soldered .....
Type of Relief Device ..... Where located .....
Pressure Limiting Device? Yes ..... No ..... Set to Cut out at .....PSI
List all Pressure Vessels in System, specifying for each: Manufacturer, size, Serial No., whether ASME or U.L., allowable working pressure, and use in system.
.....
(6 lines provided) .....
Other Components. Specify whether listed by U.L. .....
(5 lines provided) .....
TO BE FILLED IN BY DEPARTMENT
.....

Reverse Side

FIELD TEST

High Side Pressure.....PSI Low Side Pressure.....PSI
Pressure Limiting Device cut out at .....PSI
Is Unit Acceptable .....
Yes or No Inspector Date
Inspector's Comments: (if unit is rejected, give reason) .....
(20 lines provided) .....
.....
Inspector

THIS IS THE type of data that the city needs to know before approving any equipment for installation in Detroit. Cost of this test to the contractor is $40.

North Carolina Lists Men Who Passed Recent Contractor Exams

RALEIGH, N. C.—The North Carolina State Board of Refrigeration Examiners has announced the names of the men who recently passed a regular refrigeration contractor examination in Raleigh.

They are: John T. Austin, Salisbury; John D. Baity, Thomasville; James T. Bost, Burlington; Harold W. Diggett, Sr., Raleigh; William J. Edwards, New Bern; R. W. Gardner, Stella; J. Hollie Howell, Kenly; Jeter P. Jones, Jr., Brevard; Thomas B. Lampley, Charlotte; Paul L. Mann, Asheville; Lester G. Mayberry, Statesville; W. H. Oldham, Sanford; Louis A. Reaves, Greensboro; Jerry R. Sharpe, Burlington; George R. Turner, Albemarle; Thomas E. Whitson, Marion; Thomas W. Wright, Reidsville.

Each of these men has been granted a license to engage in the business of refrigeration contracting in North Carolina.

Service Auto Air Conditioners QUICKLY . . . PROFITABLY

This new manual shows you immediately the model year of unit; names, numbers, and list prices of parts; time allowance and labor rate for several hundred different models produced 1957 through 1960.

You can make an accurate estimate of costs in a hurry, order the exact parts needed if not in stock, and get the repair job done quickly without wasting valuable time.

This book also shows which compressors and clutches are interchangeable on many makes and models. This lets you service a much greater variety of makes with little increase in inventory.

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Chrysler
DeSoto
Dodge
Plymouth
Mopar
Ford
Edsel
Lincoln
Mercury
Ambassador
Rambler
Rambler American
Lark
Studebaker

Independents
A.R.A.
Allstate
Clardy
Climatic Aire
Eaton
Equip-Aire
Frigiquip
Mark IV
Parkomat
Wardaire
Wizard

PARTS AND LABOR RATE BOOK

by R. V. Anderson
(Inventor of Mark IV)

252 pages, 8½ by 11
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Exploded views of evaporator assemblies produced by Independents show each part with number. Also listed are all makes and models of cars for which Independents made units during 1957-'60; major components and part numbers, refrigerant charges. Compressor and clutch assemblies are cross-referenced. Similar data is listed for Auto Manufacturers.

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ASHRAE Members Support Lab Closing--

(Continued from Page 1, Col. 5)

wishes to go on record as supporting the decisions of the board of directors with regard to the research program."

The vote on the motion, at the conclusion of the discussion, was taken with proxy votes authorized by members in advance of the meeting for voting on any matter put before the convention, cast in favor of the motion. Individual votes were cast by members present who either withdrew their proxy or who had not submitted it. Final total showed 4,694 in favor of the motion, 31 against, with three ballots being declared void.

Opposition Viewpoint

Opposition to the research program policies as established by the board of directors was spearheaded by J. H. Clarke, Visking Co., Chicago. It centered on two main themes:

1. A question of the wisdom of abandoning the laboratory and consequently a research program oriented around a society owned and operated research facility.

2. The contention that committees concerned with the research program, and the membership generally, had not been given enough time to become fully informed on the details of the change of direction of the society's research efforts. Also, that the board of directors did not have the proper authority to dispose of the society's assets, such as those embodied in the laboratory facility in Cleveland.

What Are Legal Aspects?

At the semiannual meeting in Chicago in February, Clarke sought to get a vote which would require a referendum of the membership to approve the plans for closing the laboratory facility. The board of directors refused to give recognition to this request, maintaining that it had proper authority to take such action.

In the intervening period, Clarke addressed a long statement to society headquarters, questioning the legality of the board action, and requesting that the statement be published in the *ASHRAE Journal.*

Clarke's statement was not published, but President R. H. Tull in the "President's Page" in the Journal took note of the fact that opposition had been expressed to the board's action in closing the laboratory. He also took the occasion to publish legal opinion which back the board's authority to take such action.

At the annual meeting, the discussion of Palmatier's motion began with the society's legal counsel, S. B. Vreeland, discussing the legal aspects of the board's authority to conduct the affairs of the society, including the disposition of assets. Under New York state law, disposition of real property by a society such as ASHRAE can be carried out by the directors without the approval of members. An order of approval by a justice of the New York State Supreme Court is necessary, however.

Discussion on the motion ran to some lengths, and the following is a summary of the principal statements:

John Everetts, Jr., Philadelphia consulting engineer and first vice president of ASHRAE, pointed out that laboratory activity at Cleveland was practically terminated, with the last project to be completed by June 30. All staff members, with two exceptions, have been released (and all have found new jobs).

Of 31 local chapters who had taken a vote of an expression of opinion on the merger, 23 upheld the board's action and eight opposed it.

Aired Before Board

At an open meeting of the board in Denver prior to the opening of the meeting, the research program plans were debated fully and the decision was to continue with the course of action previously agreed upon. The contract with Kansas university involving that institution's taking over certain physical properties of the Cleveland laboratory to continue the environmental research, was approved with some minor changes.

Palmatier spoke again on his own motion, stating that the reason for bringing it before the membership was to remove any obstruction from the path of the society's research program. He said the R & T Committee now believes it can build a sound and vigorous program for the society through conducting research programs with the cooperation of educational institutions.

H. T. Gilkey, director of technical services, National Warm Air Heating & Air Conditioning Assn., discussed the research program generally. The decision to close the laboratory, he pointed out, became a rallying point, perhaps unfortunately so, for opposition to present direction of the program.

The vital question, as Gilkey sees it, is whether or not the proposed method of operation can provide a research program of the integrity and quality and pertinence which both the society and the public have come to expect from the society.

At the February meeting, the hope was expressed that the research budget would be around $180,000 per year, of which the society would contribute some $30,000, with the remaining $150,000 coming from proceeds of the exposition and contributions by various manufacturers.

Bigger Research 'Cut'?

Effect of this would be society-administered, industry-financed research program, declared Gilkey. He expressed doubt that effective financing can be obtained upon this basis, for the society will not be able to offer proof of its vital concern with research. Instead of the membership spending being $1 for every $5 contributed by outside sources, Gilkey recommended that the proportion of dues money spent for research be between 30 and 40% of a member's annual dues.

Commenting on what he said was the expressed attitude of the officers that membership of the society is not as keenly interested in the research program as it once was, Gilkey said he wasn't convinced that this is true. The society, he said, has made no concerted attempt to inform its members of these things.

There is great need to identify, select, and initiate programs which can be of real interest and concern to the industries with which the members of the society are affiliated, he said, and declared that if the officers and directors recognize what they believe to be a lack of interest in research, they must awaken this interest if they are sincere in their statement that the society needs and will have a strong research program.

A problem that will be intensified with the closing of the laboratory, as Gilkey sees it, is that of staffing the various research and technical committees, since the laboratory staff in the past served a valuable function in this regard.

No 'Consensus' Results

It is most important that the society maintains a strong, vital research program, said Gilkey, because "without research, our technical data will become committee consensus lacking the guidance and background which only research can provide. Consensus and truth do not necessarily coincide, in spite of the best of intentions."

William Holliday, Los Angeles consultant, said that the southern California chapter voted nearly unanimously to uphold the action of the board, and declared that "we are interested in the results of research, rather than the maintenance of a laboratory."

Another viewpoint was that of Neil Hutcheon, of Canada, who declared that he had long been a supporter of the laboratory, but felt that it was no longer possible to support it to do the necessary kind of research demanded by the industry. The fact that the laboratory was taking all but 10 to 15% of research funds put the program in an inflexible position, he declared.

How Clarke Saw It

Clarke, in summing up the opposition viewpoint, made these points:

The board in closing the laboratory acted without the advice of legal counsel and without requesting a recommendation from the R & T Committee.

Members were not fully informed of what was being done, and got no information at all on opposition viewpoints.

Maintenance of the society's own laboratory facilities will provide something to fall back upon if cooperative research programs prove difficult to farm out. The laboratory would serve as a nucleus for the R & T program. Never, said Clarke, did he advocate that all research activity be carried out in the laboratory.

Speaking in opposition also was Edward Teske, secretary of the Mechanical Contractors' Association of Chicago, who charged that there had been a "breach of faith" in that the merger agreement had specified that laboratory facilities would be maintained and expanded.

The major issue, however, is whether or not the cooperative programs could be as effective as a program oriented around a society owned facility, Teske said.

Long Study Cited

Somewhat in rebuttal of the opposition viewpoint, Prof. Elmer Queer of Pennsylvania State university, past president of the society, said that the work of the long range planning committee upon which the decision to close the laboratory facility was based, was announced as being available to any member at the time it was issued. Furthermore, the R & T committee chairman sat in on the deliberations of the long range planning committee, said Prof. Queer, that action on the research program was a well deliberated decision.

President Tull said that no publication had been given to the opposition viewpoint by any society publication because first, some of the statements made were of dubious legal standing, and secondly, that the operations and direction of the society's activities are a function of the board, and that the *Journal* presented the viewpoint of those directing the society's affairs, and that any publication of an opposition viewpoint in the form presented by the opposition was not proper in the *Journal.*

Text of Resolution Passed at Meeting

Whereas the Board of Directors, in accordance with its duty under the by-laws to manage the affairs of the Society, has taken action to close the laboratory in Cleveland, and whereas subsequent objection to this action by some members has created confusion which is handicapping the effective operation of the Research and Technical Committee in advancing the Research Program, and

Whereas we have confidence the board of directors has acted, and will continue to act, in the best interests of the Society and a vigorous research program,

Whereas the Research and Technical Committee has diligently carried out the decision of the Board of Directors regarding closing of the laboratory, in spite of the fact that on Jan. 5, 1961 the R & T Committee went on record in disagreement with the decision of the board:

Whereas subsequent planning and developments have led the R & T Committee to believe that the only logical course the Society can take is to continue in our plans to close the laboratory and plan our research program with cooperative institutions;

Now, therefore, the Research and Technical Committee wishes to go on record as supporting the decisions of the Board of Directors with regard to the research program.

Reports on the technical sessions of the annual ASHRAE meeting will be published in subsequent issues of the News.

ASHRAE Officers--

(Continued from Page 1, Col. 4)

the Naval Reserve.

John H. Fox, vice president of Honeywell Controls, Ltd., Toronto, Canada, was installed as first vice president. Frank H. Faust, manager of product planning, marketing research service, General Electric Co. central air conditioning division, is second vice president. Elected treasurer was John E. Dube, president, Alco Valve Co.

Mildred Larson Dies

MILWAUKEE—Mrs. Mildred Larson died here June 21. She was the wife of Gustave A. Larson, president of Gustave A. Larson Co., air conditioning and refrigeration parts supplies wholesaling firm with many locations in the Midwest.

Mrs. Larson is also survived by a son, Karl, an official of the supplies wholesaling firm.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

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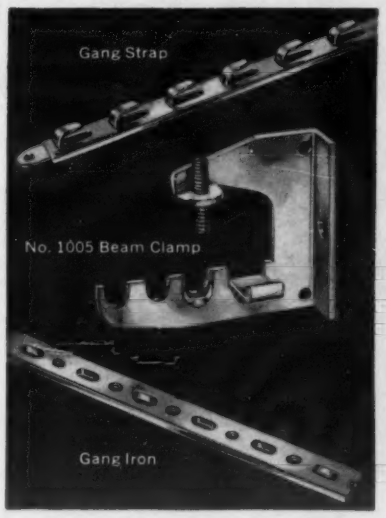

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From the Files of the News

25 years ago . . .

At its spring meeting the ASRE failed to appoint the society's part of a joint ASRE-ASHVE committee to formulate an air conditioning applications code, although some action is contemplated at a future date. Complete public acceptance of air conditioning by 1941 was the prediction made at a joint ASRE-ASHVE session by Willis Carrier in a paper on the history and growth of air conditioning, and Prof. C. W. Chamberlain's talk, "Theory and Practice of the Heat Pump" was most enlightening.

The joint session was also told that waterworks officials are making special preparations for increased demands caused by air conditioning, and that there should be no problems of supply not meeting demand. Phil Redeker reported on the convention for the NEWS.

To clarify the meaning and functions of true air conditioning, the Air Conditioning Manufacturers' Association and Kinetic Chemicals are jointly sponsoring an advertising program in business, professional, and general publications.

Because May 20 NEWS Air Conditioning Specifications issue was all sold out, the complete tabulation is to be reprinted in the July 29 issue. This issue will also have data on heating systems which provide humidification and forced air circulation.

Fred Riggin has been named president of Mueller Brass Co., with Max Edmondson as new secretary and Zelda Dunkel new assistant secretary.

A new air conditioning refrigeration machine, embodying principles of design used in automobile and airplane engines, has been introduced by G-E.

Another possible "first" is an all-electric year-round Westinghouse air conditioning and heating system recently installed in the Southern Sierras Power Co. administration building in Riverside, Calif. The system uses the "reverse cycle" of refrigeration.

Three air conditioning contracts totaling $350,000 were awarded York. Installations are for Gimbel's department store, Pittsburgh; the Mayflower hotel, Washington, D. C.; and Lowenstein's department store, Memphis.

Greyhound recently bought 300 air conditioned buses.

10 years ago . . .

A special liquid covered filter that will remove odors from the area served by the air conditioning system has been perfected by Research Products Corp.

When an Omaha bartender had air conditioning installed so that it blew cool air over the bar, customers complained—because the air "flattened" the draft beer—and the bartender complained because his "cooled" customers stayed too long. Now the comfort cooling comes from another location in the bar.

Installation of air conditioning in a Chicago restaurant made use of an existing 6-ton package unit coupled with a new G-E 7½-ton conditioner—a successful blending of the old with the new.

A jewelry store owner who had an air conditioner installed in the transom of his tiny store is so pleased with comfort results that his recommendations have brought many other customers to the local Frigidaire dealer who installed it.

In a long, narrow drugstore in Hamilton, Ohio, a "vest pocket" sized air conditioning system has been built from a 3-hp packaged unit connected to 50-ft duct, and the owner reports a large summer business increase a direct result of the installation.

'Shoppers World' To Be a Cool One

BRAMPTON, Ont., Can.—Peel Village Developments, Ltd., announced that construction would start soon on its "shoppers world" near here, an enclosed one-roof, air conditioned, mall-type building of 260,000 sq ft. It will enclose 55 retail stores, department store, bowling alleys, and theater.

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- Refrigeration Problems and Their Solution—$1.50 each ☐ J-1 ☐ J-2 ☐ J-3 ☐ J-4 ☐ J-5
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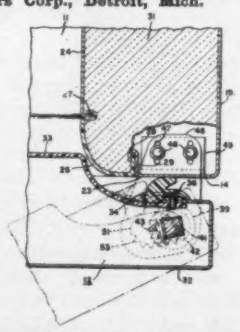
PATENTS

Week of March 14 (Concluded)

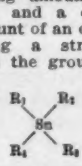
2,975,013. REFRIGERATOR HINGE. James A. Wallace and Nevin D. Nolder, Dayton, Ohio, assignors to General Motors Corp., Detroit, Mich.



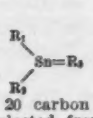
In combination, a refrigerator cabinet having a refrigerated food storage compartment therein provided with an access opening in a wall of said cabinet, a door normally closing the compartment opening, a resilient gasket carried by and extending around said door compressed between the door and said cabinet wall for air sealing the compartment opening, hinge means mounting an edge of said door upon said cabinet for swinging movement relative thereto, said hinge means comprising a bracket secured to the cabinet with a flat single thickness portion projecting outwardly from said cabinet wall and a hinge pin associated with said bracket projecting portion, said hinge pin including two integral parts in side by side relationship and concentric with one another. . . .

2,975,137. COMPRESSION REFRIGERATION WORKING FLUID. Archibald P. Stuart, Media, Pa., assignor to Sun Oil Co., Philadelphia Pa.
No Drawing.

1. A compression refrigeration working fluid consisting essentially of a halogen-substituted hydrocarbon refrigerant, a lubricating amount of a mineral oil lubricant and a copper-plating inhibiting amount of an organotin compound having a structural formula selected from the group consisting of:



and



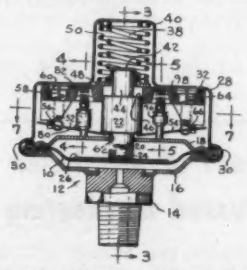
where: R_1 is a 1 to 20 carbon atom hydrocarbon radical selected from the group consisting of: alkyl, cycloalkyl, alkaryl and aryl radicals; R_2 is a radical selected from the group consisting of $-OR_1$ and

wherein R_1 is as defined above; R_3 and R_4 are are radicals each selected from the group consisting of R_1, $-OR_1$ and

wherein R_1 is as defined above; and R_3 is a radical having 2 to 10 carbon atoms and is selected from the group consisting of hydrocarbondioxy and dicarboxylic acid radicals wherein the hydrocarbon portion is selected from the group consisting of aliphatic, alicyclic and aromatic portions.

2,975,251. PRESSURE SWITCH. Wilbert E. Beller, Park Ridge, and Edwin A. Ostrowski, Mount Prospect, Ill., assignors to Controls Co. of America, Schiller Park, Ill.

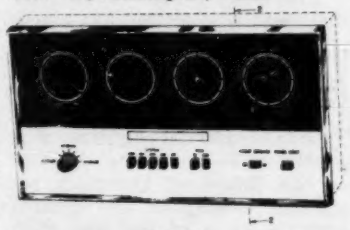
1. A pressure actuated switch mechanism comprising, a housing including a pressure chamber including a diaphragm, a plunger actuated by the diaphragm, a loading spring acting on the plunger to oppose the pressure, a second loading spring engageable with the plunger only after the plunger has moved a predetermined distance whereby further movement of the plunger requires a higher pressure in said chamber, and switch means actu-



ated by the plunger, said switch means including switch actuating means receiving motion from the plunger, the actuating means having a lost motion connection to the plunger and including stop means effective to prevent continued motion of the actuating means when such continued motion would overload the switch means.

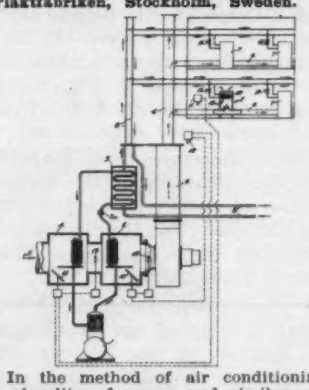
DESIGNS

189,889. COMBINED SPACE CONDITION CONTROL AND WEATHER INDICATING INSTRUMENT. Henry Dreyfuss, South Pasadena, Calif., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.



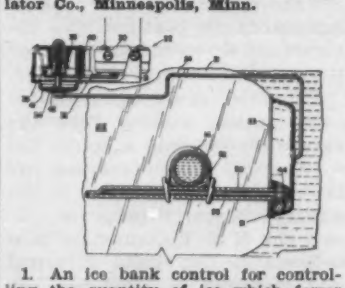
Week of March 21

2,975,609. AIR CONDITIONING. Claes Allanger, Sodra, Angby, and Bror Lunden and Karl Nilsson, Bromma, Sweden, assignors to AB Svenska Flaktfabriken, Stockholm, Sweden.



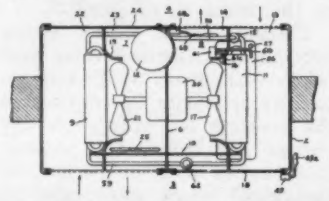
In the method of air conditioning a plurality of rooms and similar enclosed areas comprising the steps of pretreating outdoor air in a central air conditioning plant by cooling and dehumidifying the air, and then reheating the air approximately to the temperature of the room air, distributing said pretreated air through a duct system to individual room units, mixing said air with recirculated room air and passing said mixed air over a heat exchanger disposed in each room unit to individually control the temperature of said mixed air to be discharged into the rooms. . . .

2,975,610. CONTROL APPARATUS. Elwyn H. Olson, St. Paul, Minn., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.



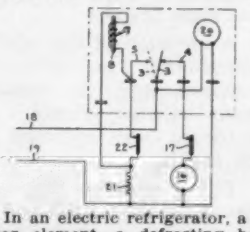
1. An ice bank control for controlling the quantity of ice which forms on a cooling coil of a refrigeration apparatus comprising, switch means adapted to control the energization of the refrigeration apparatus, sensing means responsive to the quantity of ice on the cooling coil, and means connecting said sensing means to said switch means so that the refrigeration apparatus is operated to maintain a selected quantity of ice on the cooling coil, said sensing means comprising a water filled chamber bounded on one side by a flexible diaphragm, a tube sealed at one end and connected at the other end to said chamber to form a part thereof. . . .

2,975,611. CONTROL SYSTEM FOR AIR CONDITIONING UNITS. Joseph A. Pietsch, Louisville, Ky., assignor to General Electric Co.



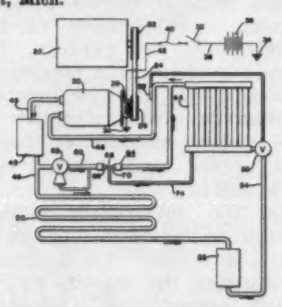
1. An air conditioner for both heating and cooling an enclosure comprising a casing adapted for mounting in an outer wall of said enclosure, a refrigeration system in said casing including a compressor, a condenser and an evaporator connected in refrigerant flow relationship, refrigerant expansion means connected between said condenser and said evaporator for expanding refrigerant from condensenr pressure to evaporator pressure. . . .

2,975,612. CONTROL MEANS FOR DEFROSTING REFRIGERATORS. Joseph J. Everard, Two Rivers, Wis., assignor to Paragon Electric Co., Two Rivers, Wis.



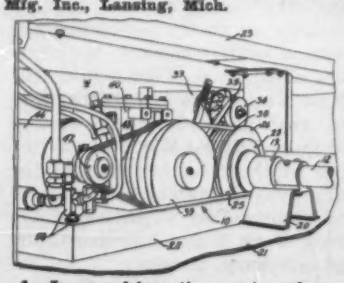
1. In an electric refrigerator, a compressor element, a defrosting heater, a low temperature thermostat in series with said compressor element and arranged to open on decrease of temperature below a predetermined point, a high temperature thermostat in series with said heater and arranged to open on rise of temperature above a predetermined point, a switch including a first contact means operatively connected to said compressor element, a second contact means operatively connected to said heater, a third contact means constituting a power supply means and biased towards contact with said first contact means. . . .

2,975,613. REFRIGERATING APPARATUS WITH ASPIRATOR IN A BY-PASS. John H. Heidorn, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich.



1. Refrigerating apparatus including an operative refrigerant circuit comprising a compressing means having an inlet and an outlet, a condensing means having an inlet and an outlet, an evaporating means having an inlet and an outlet, a first conduit means including a flow control device connecting the outlet of said condensing means and the inlet of the evaporating means, a second conduit means connecting the outlet of said compressing means and the inlet of said condensing means, a third conduit means connecting the outlet of the evaporating means and the inlet of the compressing means, a by-pass conduit means connecting said second and third conduit means, said by-pass conduit means including an aspirator means provided with a suction entrance. . . .

2,975,614. MOBILE REFRIGERATION SYSTEM. James W. McGuffey, Lansing, Mich., assignor to Tranter Mfg. Inc., Lansing, Mich.



1. In a refrigeration system for a vehicle, a vehicle driven shaft, a compressor unit, an electrical generator unit, a stand-by motor, means connecting said generator unit with said

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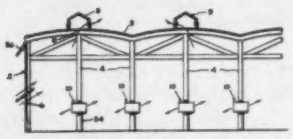
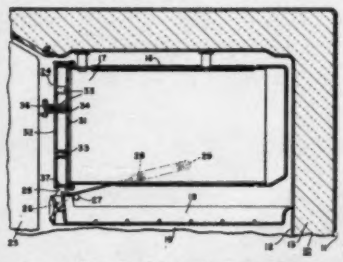
shaft and said compressor unit with said shaft and motor for selective drive thereby, including an electrically controlled clutch in each of a pair of driving connections from said motor and shaft to said compressor unit. . . .

2,975,615. AIR CONDITIONING ARRANGEMENT FOR RELATIVELY HIGH ROOFED BUILDING STRUCTURES. Leonard W. Atchison, Louisville, Ky., assignor to General Electric Co.



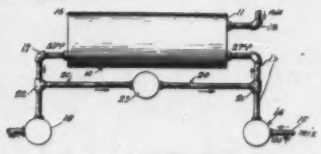
1. In combination with a building having means for ventilating the upper portion thereof, a plurality of supporting columns for the roof of said building, means on said supporting columns slightly above the heads of the occupants of said building for mounting window-type air conditioning units, said units being mounted entirely within said building, each of said air conditioning units having a refrigeration unit mounted therein including an air cooling unit and a condensing unit for supplying liquid refrigerant to said air cooling unit, means in each of said air conditioning units for circulating an air stream from the upper portions of said building over said condensing unit and for discharging said air stream in an upward direction from said air conditioning unit. . . .

2,975,616. REFRIGERATING APPARATUS. Orson V. Saunders, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich.



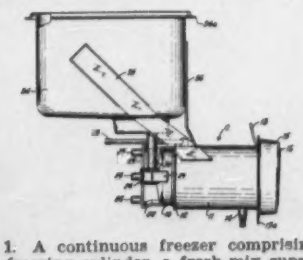
A movable double-walled door structure formed of separate secured together imperforate inner and outer panels spaced from one another to provide a single hollow chamber therebetween extending continuously intermediate four opposed peripheral edges of the door, said inner imperforate door panel closing a low temperature compartment located within a relatively higher temperature compartment and preventing flow of air between said door chamber and said low temperature compartment, said peripheral edges of said door being closed at the top and sides thereof and open at its bottom edge for circulation of air from said higher temperature compartment into the hollow door chamber. . . .

2,975,617. AERATING AND REFRIGERATING APPARATUS. Alden H. Wakeman, Lake Mills, Wis., assignor to The Creamery Package Mfg. Co., Chicago, Ill.



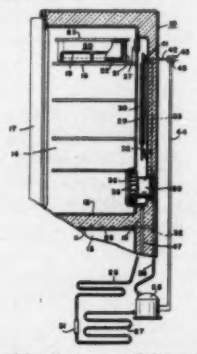
1. An aerating and refrigerating apparatus for a readily solidifiable liquid, comprising an elongated refrigerated chamber through which such a liquid flows and is simultaneously aerated, first conduit means connected to the inlet side of said chamber for effecting introduction of such liquid into said chamber, second conduit means connected to the inlet side of said chamber for effecting removal of aerated and refrigerated liquid from said chamber, third conduit means having one end thereof connected to said first conduit means and the other end thereof connected to said second conduit means. . . .

2,975,618. CONTINUOUS FREEZER. Lawrence E. Koch, Beloit, Wis., assignor to Louis A. M. Phelan, Rockton, Ill.



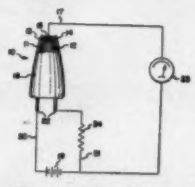
1. A continuous freezer comprising, a freezing cylinder, a fresh-mix supply tank in mix delivering communication with said cylinder and rigidly secured thereto by strap means to form a cylinder-tank unit, a container for said unit and substantially enclosing the latter and forming an enclosed space therewith, and a rigid and self-supporting insulation of the cellular plastic type in said space between said unit and container, said insulation rigidly supporting said cylinder and said tank with respect to one another and also in respect to said container.

2,975,619. REFRIGERATOR WITH MEAT STORAGE RECEPTACLE. Orson V. Saunders, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich.



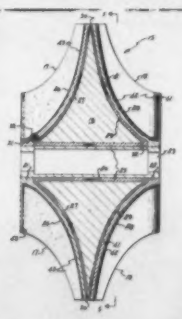
In combination, a refrigerator cabinet having a food compartment therein provided with a front opening closed by a door, a refrigerating system associated with said cabinet including a refrigerant evaporator for cooling air in said compartment, said evaporator being disposed in a flue provided in the cabinet having an inlet opening and an outlet opening communicating with said compartment, means for circulating air from said compartment into said flue over said evaporator to cool the air to a temperature below 32°F and force the cold air out of the flue back into the compartment through said flue openings respectively. . . .

2,975,638. ELECTRICAL HYGROMETER DEVICE. Stanley R. Morrison, Minnetonka Village, Minn., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.



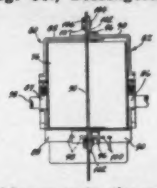
1. An apparatus for determining the moisture content of a gaseous mixture comprising a source of electrical current, thermoelectric means having a junction which is arranged to be cooled upon passage of an electrical current therethrough, and current divider means in thermal and electrical contact with said junction, said current divider means including a support member with a film of a certain electrically conductive material disposed thereon and having electrical contact means arranged on a surface which is spaced from said support member, said electrically conductive material being characterized in that the electrical resistivity drops substantially upon substantial saturation with water, said current divider means being arranged to maintain the said electrically conductive material at an equilibrium moisture content.

2,975,959. BACK-TO-BACK CENTRIFUGAL COMPRESSOR AND CENTRIPETAL TURBINE HAVING AN INTEGRAL ROTOR DISC. Berry W. Foster, 1147 10th St., Santa Monica, Calif.



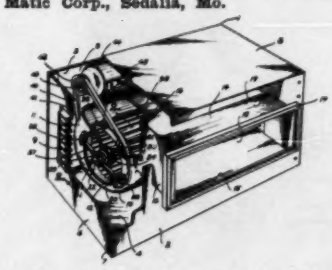
1. A unit comprising a compressor-turbine combination, including an annular single rotor disc, centrifugal compressor blades on one side of said disc, and centripetal turbine blades on the other side of said disc, said unit having a cooling system comprising a cylindrical channel near the inner periphery of said disc, a series of second channels leading generally radially outwardly from the opposite sides of said cylindrical channel each said second channel being generally parallel to the surface of the side to which it is closer and terminating at its radially outer extremity in a port joining it to a said second channel from the opposite side. . . .

2,975,960. BLOWER UNIT AND MOTOR SUPPORTING MEANS FOR USE THEREIN. Anwar A. Atalla, Torrington, Conn., assignor to The Torrington Mfg. Co., Torrington, Conn.



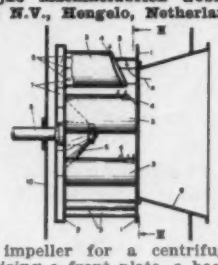
1. In a blower unit, the combination of a housing including parallel side walls respectively having circular intake openings concentric with a common central axis, one of said openings being adapted for motor assembly therethrough, a thin partition of said housing parallel with and midway between said side walls and having a relatively large opening through which said central axis extends which last said opening is smaller than the assembly opening, an electric motor including a casing substantially smaller than said partition opening and located therein and also including a drive shaft concentric with said central axis and having projecting end portions which motor further includes two cylindrical supporting elements adjacent the opposite ends of the casing. . . .

2,975,961. BLOWER UNIT. Raymond E. Rodick, Sedalia, Mo., assignor, by mesne assignments, to The Steam-O-Matic Corp., Sedalia, Mo.



1. A blower unit comprising, a casing including a pair of spaced end walls and a peripheral wall extending around the edges of said end walls, means at the ends of the peripheral wall defining a casing outlet opening, a casing end wall having an inlet opening, a shaft extending through the casing with the longitudinal axis thereof aligned with the end wall inlet opening, means secured to said end walls and supporting the end portions of said shaft, an elongate air impeller having spaced end members and spaced blades in the periphery of the impeller and extending between said end members, said impeller being carried by said shaft and rotatably mounted in said casing with said end members adjacent the end walls of the casing....

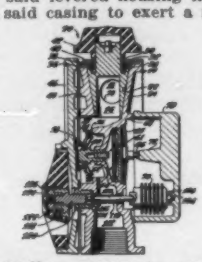
2,975,962. IMPELLERS FOR CENTRIFUGAL FANS. Jan C. Busquet, Hengelo, Netherlands, assignor to Koninklijke Machinefabriek Gebr. Stork & Co. N.V., Hengelo, Netherlands.



An impeller for a centrifugal fan comprising a front plate, a back plate, hollow blades having leading and trailing ends and extending between said plates, an opening in one of said plates for each hollow blade and communicating with the interior of said blade, means for introducing fluid through said openings and into the blades at a pressure exceeding that existing at the periphery of the impeller when it is operating, a discharge opening at the trailing end in the wall of each blade adjacent the front plate and remote from the impeller axis, said opening extending for at least part of the width of the blade, the width of the discharge opening of the blade at the front plate of the impeller being larger than towards the back plate of the impeller.

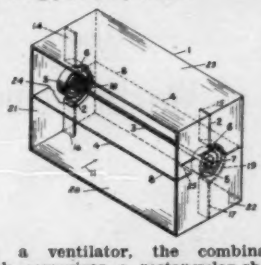
2,975,974. THERMOSTATIC DEVICES. Wilbur F. Jackson, Compton, and John W. Wright, Long Beach, Calif., assignors to Robertshaw-Fulton Controls Co., Richmond, Va.

1. In a control device, the combination comprising a casing, flow control means enclosed within said casing being movable between controlling position, means to bias said flow control means to one of its positions, actuating means to move said flow control means against said biasing means to another of its positions, said actuating means having a portion extending exteriorly of said casing, a hollow levered housing exteriorly of said casing engaging said actuating means and being fulcrumed on said casing, said portion of said actuating means extending within the hollow portion of said levered housing, spring means biasing said levered housing in an arc toward said casing to exert a force on



said actuating means to move said flow control means to the said another of its positions, and thermally responsive means operatively engaging said levered housing and exerting a second force thereon opposite to the first force and variable in accordance with temperature variations so that operation of said actuating means is dependent upon the resultant of the forces, said thermally responsive means extending within the hollow portion of said levered housing.

2,975,975. AUTOMATIC VENTILATORS. Erwin L. Weber, 632 Medical Arts Bldg., Seattle, Wash.



In a ventilator, the combination which comprises a rectangular-shaped casing having a base, side walls extended upwardly from sides of the base, and an upper panel parallel to the base and connecting upper edges of the side walls, shrouds extending from the base to the upper panel and having vertically disposed upper and lower flanges positioned in a plane extending longitudinally through the casing and connected by semi-circular sections, said shrouds being located at the ends of the casing and secured to inner surfaces of the side walls. . . .

(To Be Continued)

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AIR CONDITIONING and heating mechanic. 30-45, experienced. Open shop, vacation and benefits. Send photo and resume to THEODORE M. WILLIAMS COMPANY, 979 Volusia Ave., Daytona Beach, Florida.

APPLICATION ENGINEER—required by Fedders Corporation, location—Buffalo, N. Y.—excellent opportunity for qualified graduate engineer with three years' experience in application engineering on residential air conditioning and heat pumps. Will work directly in Engineering Department preparing manuals, spec sheets and assisting field engineers on problems of installation and application of equipment. All inquiries will be held confidential. BOX A6800, Air Conditioning, Heating & Refrigeration News.

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RACCA President Sees Progress--

(Continued from Page 1, Col. 4)

able impact has been achieved through taking up case histories with individual manufacturers.

"When we get a well-documented example of direct selling by a manufacturer of equipment which rightfully should only be sold, installed, or serviced by a contractor," McCarty explained, "we present the facts to the manufacturer and seek a statement of policy against further actions of this type."

Industrial Accounts

With supplies wholesalers, states RACCA's president, the major "trade relations" problem has been that of sales by wholesalers to what is known as "industrial accounts." These are major users of air conditioning and refrigeration equipment who may have their own mechanics functioning as installation and service mechanics.

"There are two points at issue here," McCarty pointed out. "One is that unless the user's mechanics are qualified, there is danger to life and property in the use of refrigerants and in systems where high pressures are likely to develop. Even if the mechanics are fully qualified, we believe that any sales made to an industrial user be at a differential higher than those made to the contractor, because such sales involve more work and responsibility on the part of the wholesaler."

The fact that progress is being made on such problems, and that trade relations are generally friendlier on an all-around basis, is evidence that association activity has brought results in this area, stated RACCA's president.

Separate Contract

In the matter of the air conditioning contractor bidding separately on the work which he does in large construction contracts, McCarty says that progress towards this goal continues to be shown. In many parts of the country the mechanical segment of a large construction project is broken into the following divisions, with separate bids placed on each (1) plumbing (2) electrical (3) air conditioning, heating, and ventilating.

The separate contract is desirable not only to prevent bid shopping, says RACCA's chief, but also because it enables the builder or the buyer of the building to place the responsibility for any part of a job on the man who should take such responsibility and who is familiar with the work.

In labor relations, McCarty believes that policies worked out with union officials at the national level have generally proved satisfactory, but that such is not always the case at the local level. He cited the following as some of the local problems remaining:

1. Refusal of some UA locals to bargain with local RACCA groups of contractors.

2. Refusal of some locals to take into membership the employes of some contractors, even though the employes seek union affiliation. This has opened the door for negotiations with some other large unions.

3. Opposition in some areas to both apprentice and journeyman training in the special skills needed by air conditioning and refrigeration mechanics.

Two years ago at its national meeting RACCA took a strong stand against the extended (5-year) warranty. In the past year RACCA has not been pressing for any particular action on the warranty, one reason being that the contractors' association believes — taking some of the credit for its representations on the subject — that the situation has improved. McCarty points to the limitation of the warranty to the motor compressor in most instances, and the removal or revamping of labor allowance provisions.

One area in warranties that still needs improvement, as he sees it, is in making it clear to both seller, user, and replacement factor as to the exact meaning of the warranty, and the obligation of each party involved in a warranty contract.

Taking a look at the over-all progress of RACCA, and its future course, McCarty had this to say:

"Some of the accomplishments which have been outlined show the strength of association activity to be the providing of an avenue of communication between various segments of the industry, and this avenue of communication makes it possible to get action on current problems. Our record is such that I believe we deserve the support of all contractors who do any substantial part of their business in air conditioning and refrigeration."

Membership in RACCA has shown a good growth since the last national convention, McCarty says, both in terms of affiliation of local groups, and through individual contractors taking membership. A current "pilot" membership drive campaign is concentrating on getting membership among individual contractors in small and medium sized cities.

Housing Bill--

(Continued from Page 1, Col. 1)

loans and repayment periods to what they consider reasonable bounds.

However, for homeowners who want to add new heating and air conditioning plants to their homes, it opens the way to lower, more extended payments than was heretofore possible.

A provision of the Senate bill that would have limited the more extensive terms to houses at least 10 years old was dropped in conference.

Universal Corp. Moves Plant

TUCKAHOE, N. Y. — Universal Diffuser Corp. announced that it is moving its manufacturing plant on June 30 from Tuckahoe into new quarters occupying 40,000 sq ft at 155 Saw Mill River Rd., Yonkers, N. Y.

It was also announced that with the additional equipment being installed plus the new facilities, the company is expanding its line to include extruded aluminum grilles, extruded and anodized aluminum multi-pattern diffusers, additional types of its "Line-Air" diffusers, and combination lighting troffer and diffuser.

A complete testing laboratory is being installed for research, development, and demonstration, and development work is also "on the way" to produce a dual-duct mixing box line.

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